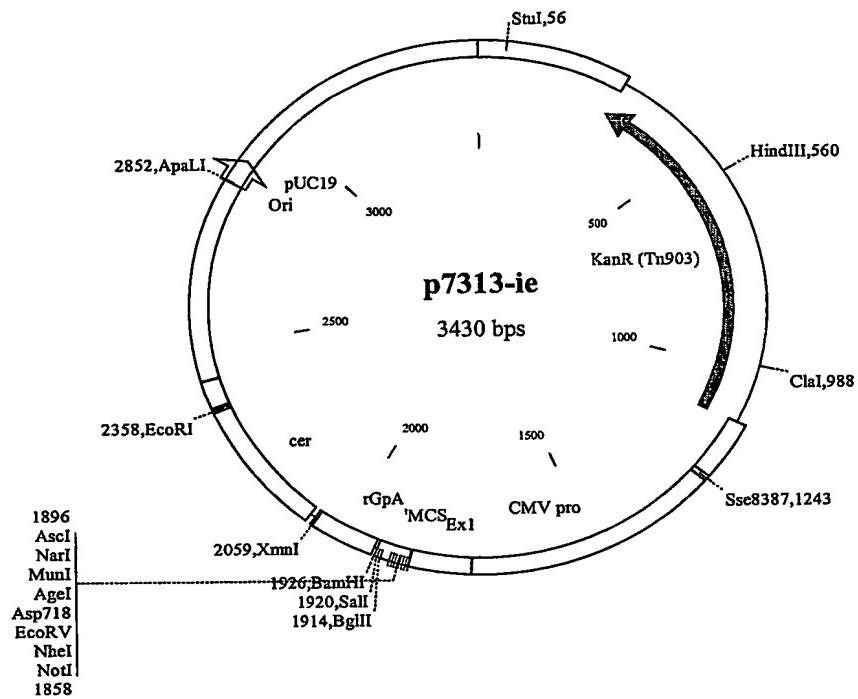
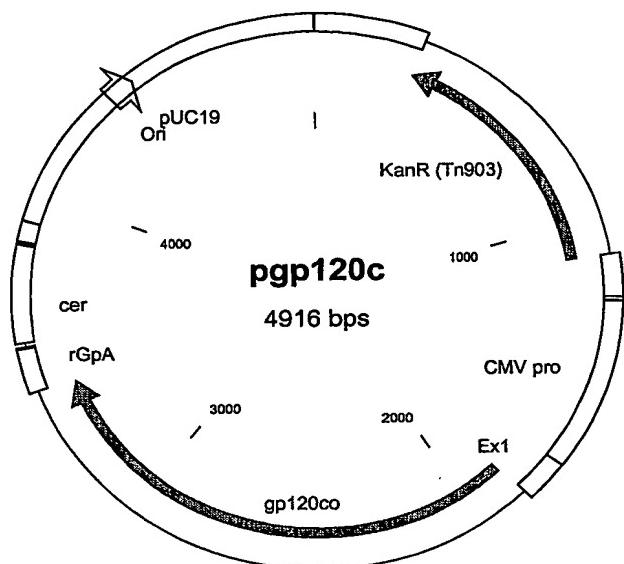


**Figure 1**

**Figure 2**

Map of pgp120c:



The amino acid sequence of the W61D gp120 is below. The signal sequence is underlined and bold, up to the predicted cleavage site between amino acids 29 and 30. This is the sequence removed in dsgp120 (pRix12 etc).

**MKVKE**T**RKNYQHLWRWGTMLLGMLM**I**C~~S~~A**E**QLWVTVVYGVPVW**K**EATTTLFCASDAKAYDTEVHNWATH**

ACVPTDPNPQE**V**VLGNVTEYFNMWKNNMV**D**QM**H**EDI**I**SLWDQS**L**KPCV**K**LTPLCV**T**LCDDVNTTNSTTTT

SNGWTGEIR**K**GE**I**KNCSFNITTS**I**RD**K**VQ**K**E**Y**ALF**N**LD**V**V**P**I**DD**DNATT**K**NKTTRN**F**R**L**IHCNSSVMTQA

CPKVS**F**EPIPIHYCAPAGFAIL**K**CNN**K**TFDG**K**G**L**CTNV**V**ST**Q**CT**H**IRPV**V**ST**Q**LL**NG**SLAE**E**EV**V**IRSD

NFM**D**NT**K**T**I**IVQLNESVA**I**NC**T**RPNN**N**TR**K**GI**H**IGP**G**RAFY**A**ARK**K**I**G**DIR**Q**A**H**C**N**LS**R**A**Q**WN**N**TL**K**Q**I**VI

KL**R**E**H**FG**N**K**T****I**K**F**N**Q**SSGG**D**P**E**IV**R**HS**F**NCG**G**EFF**Y**C**D**T**Q**LF**N**ST**W**NG**T**EG**N**TE**G**N**S**T**I**TL**P**CRI**K**Q**I**II

N**M**W**Q**EV**G**K**A****M****Y**APP**I**GG**Q**I**R**C**S****S****N****I**T**G**LL**T**RD**G**G**T**EG**N**G**T**EN**E**TE**I**FRPGGGDMRD**N**WR**S**ELY**K**Y**V**V**K**V

EPLGV**V**AP**T**R**A**K**R**RV**V**QR [SEQ ID NO: 49]

The codon optimised DNA sequence for the W61D gp120 gene is:

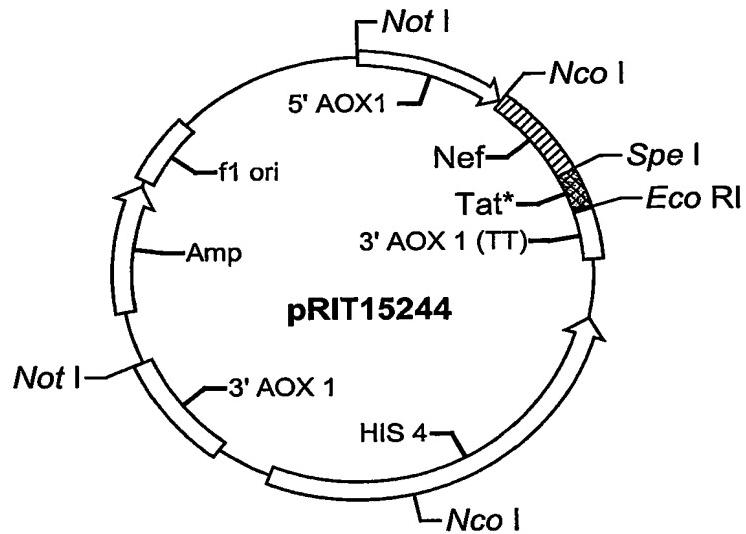
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 TGCCCCAAGGTGTCTCGAACCAATCCGATCCATTACTGTGCCCCCTGCGCGATTCGCGATCCCAAGTG  
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**Figure 2 continued**

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CATCACCGGCTGCTGCTCACCAAGACGGGGCACCGAGGGCAACGGCAGGAGAACGAGACGGAGATCT  
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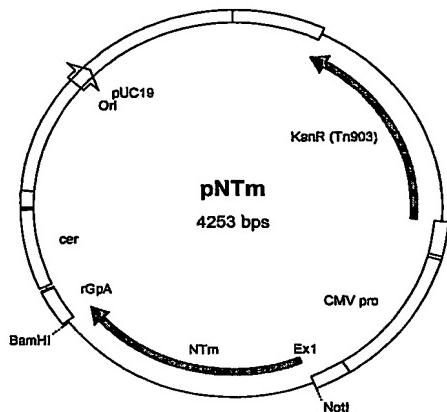
**Figure 3**

Map of pRix15244:



**Figure 4**

Plasmid pNTm:



Sequence of insert:

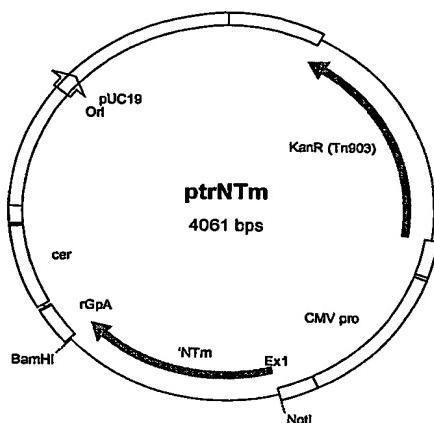
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AGACTAGAGCCCTGGAGCATCCAGGAAGTCAGCCTAAAAGTCTGTACCAATTGCTATTGTAAAAAGTG  
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Amino acid sequence of antigen:

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**Figure 5**

Plasmid ptrNTm:



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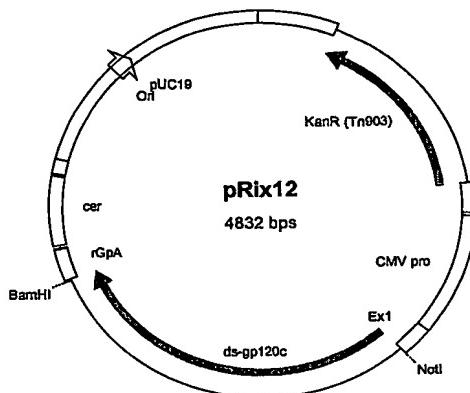
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CAATTGCTATTGTAAGTGTGCTTCAATTGCAAGTTGTTCTATAACAGCTGCCCTAGGCATCTCCT
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AAGCAACCCACCTCCCATTCAAAGGGAGCCGACAGGCCGAAGGAATAA [SEQ ID NO: 53]
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Amino acid sequence of antigen:

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TSEPVDPRLPKHPGSQPKTACTNCYCKKCCFHQCVCFTAAALGISYGRKKRRQRRRPPQGSQTHQVSLS
KQPTSQSKEPTGPKE [SEQ ID NO: 54]
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**Figure 6**

Plasmid pRix12:



Sequence of insert:

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CGGACCCCCAACCCCCCAGGAGGTGGTGTGGAAACGTGACCGAGTAGTTCAACATGTGGAAGAATAACATG
GTGATCAGATGCACGAGGACATCATCTCTGTGGGACCAAGTCCTGAAGCCCTGCCTGAAGCTGACGCC
TCTCTGCGTGAACACTGGACTGTGACGACGTCAACACCACCAACAGCACTACCAACCACAGCAACGGCTGGA
CCGGAGAGATTCGGAAGGGCGAGATCAAGAACTGCTCCTCAATATCACGACCTCGATCAGAGACAAGGTG
CAGAGGAATACGGCGTGTGTTTATAATCTCGATGTGGTCCCCATCGACGACGACAATGCCACCAAGAA
CAAGACGACCGTAATTTCAGACTCATTCACTGCAACAGCAGCGTCATGACGACGGCTGCCCAAGGTGT
CCTCGAACCAATCCCGATCCATTACTGTGCCCTGCCGGATTCCGATCCTCAAGTGTAAACAACAAGACC
TTCGACGGGAAGGGCTGTGCACCAACGTCAGCACGGTGCAGTGCACCCATGGCATCCGCCCCGTGAG
CACCCAGCTGCTGCTGAACGGGCTCCCTGGCTGAGGAGGGAGGTGGTATCCGGTCCGGACAACCTCATGGACA
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Amino acid sequence of antigen:

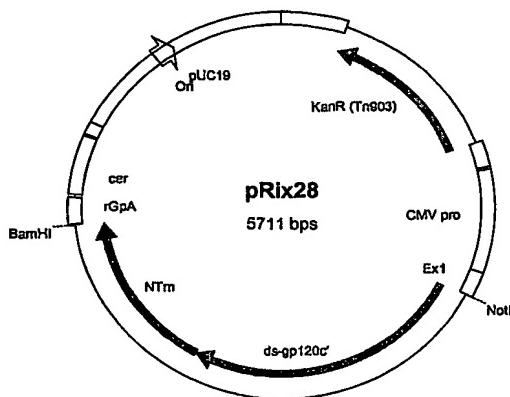
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FDGKGLCTNVSTVQCTH GIRPVVSTQLLLNGSLAEEEEEVIRSDNFMDNTKTIIVQLNESVAINCRPNNT
RKGIHIGPGRAYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIFQNQSSGGDPEIVRHSF
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**Figure 7**

Plasmid pRix28:



Sequence of insert:

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**Figure 7 continued**

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~~ATCAAGTTCTATCAAAGCAACCCACCTCCCAATCCA~~AAGGGGAGCCGACAGGCCGAAGGAATAA

[SEQ ID NO: 57]

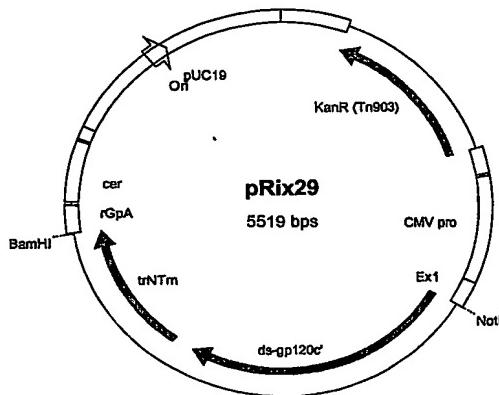
Amino acid sequence of antigen:

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[SEQ ID NO: 58]

**Figure 8**

Plasmid pRix29:



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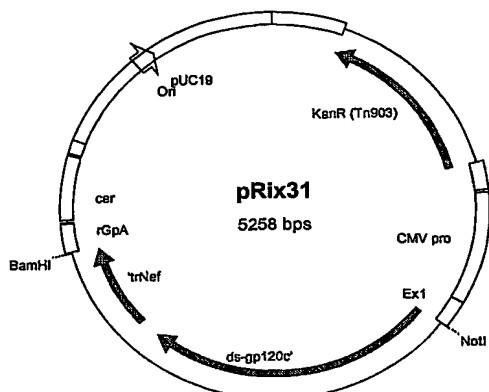
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Amino acid sequence of antigen:

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**Figure 9**

Plasmid pRix31:



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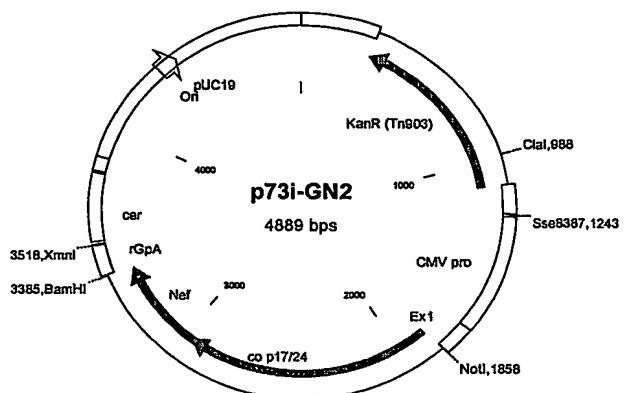
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Amino acid sequence of antigen:

**Figure 9 continued**

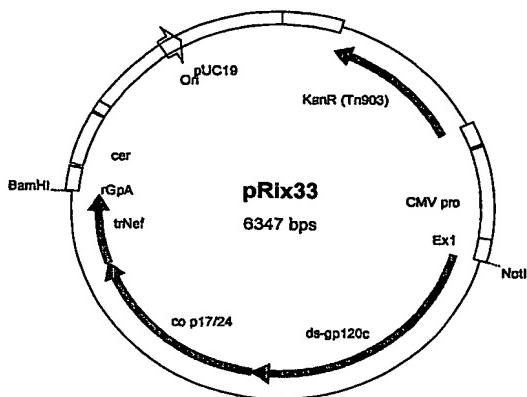
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NCGGEFFYCDTTQLFNSTWNGTEGNNTEGNSTITLPCRICKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
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[SEQ ID NO: 62]

**Figure 10****Sequence of insert:**

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 GTGAAGAGCTGAGGTCTTGATAAACACAGTGGCTACCCCTACTGCGTACACCAGAGGATCGAGATTAAG  
 GATACCAAGGAGGCCTGGACAAAATTGAGGGAGGAGCAAACAGAGCAAGAAGAAGGCCAGCAGGCAGC  
 TGCTGACACTGGCATAGCAACCAGGTATCACAGAACTATCCTATTGTCCAAAACATTCAGGGCCAGATGG  
 TTCACTCAGGCCATCAGCCCCGGACGCTCAATGCCTGGGTGAAGGTTGTCGAAGAGAAGGCCCTTCTCCT  
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 ACACCAAGGGCCAGGGTCAGATATCCACTGACCTTGGATGGTCTACAAGCTAGTACCGAGTTGAGCCAGA  
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**Figure 11**

Plasmid pRix33:



Sequence of insert:

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CAAGACGACCGCTAATTTCAGACTCATTCACTGCAACAGCAGCGTATGACGCAGGCCCTGCCCAAGGTGT
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CACCCAGCTGCTGCTGAACGGGCTGGCTGAGGAGGGTGGTATCCGGCTGGACAACTTCATGGACA
ACACCAAGACAATCATCGTCCAGCTGAACGAGTCTGTGGGATTAACTGTACCCGGCTAACAAACAACACC
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TGAAGGAGACTATCAACGAGGAGGGCAGGCCAGAGTGCATCCGCTCACGCTGGCCCAATCGCG
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**Figure 11 continued**

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CAGCTTGTACACCCGTGAGCCATGGAATGGATGACCTGAGAGAGAAGTGTAGAGTGGAGGTTG  
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[SEQ ID NO: 64]

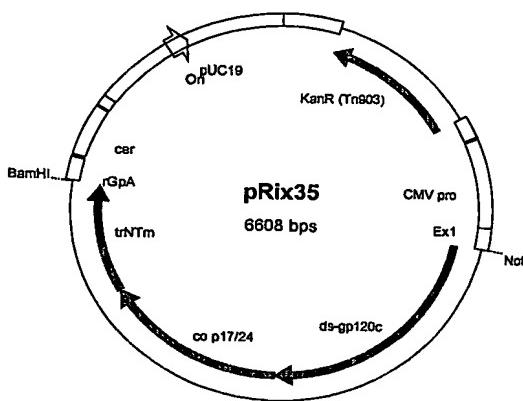
Amino acid sequence of antigen:

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QKEYALFYNLDVVPIDDDNATTKNKTTTRNFRLIH CNSVMTQACPKVSFEPIPIHYCAPAGFAILKCNNKT  
FDGKGLCTNVSTVQCTHIGIRPVVSTQLLNGSLAEEEVIRSDNFMDNTKTIIVQLNESVAINC TRPNNNRT  
RKGIHGPGRAYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIFQNQSSGGDPEIVRHSF  
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[SEQ ID NO: 65]

**Figure 12**

Plasmid pRix35:



Sequence of insert

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**Figure 12 continued**

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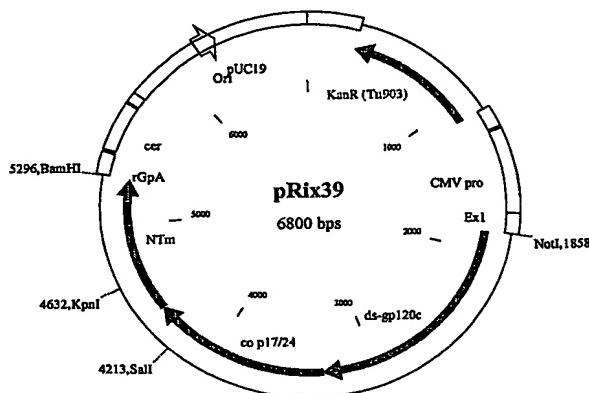
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Amino acid sequence of antigen:

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**Figure 13**

Sequence of insert:

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TGAAGGAGACTATCAACGAGGAGGCAGCCGAGTGGACAGAGTGCATCCCGTCCACGCTGGCCCAATCGC
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**Figure 13 continued**

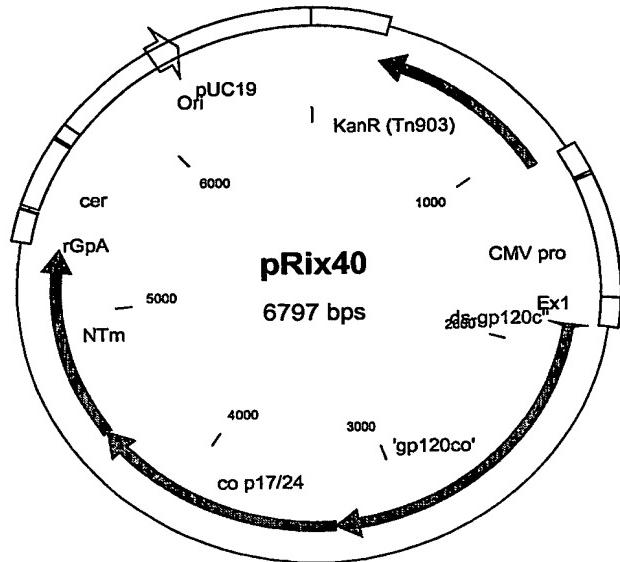
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Amino acid sequence of antigen:

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PGQMREPRGSDIAGTTSTLQEIQIGWMTNNPIPVGEGIYKRWIILGLNKIVRMSPTSILDIRQGPKEFRD  
YVDRFYKTLRAEQASQEVKNWMTETLLVQNANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGG  
KWSKSSVVGWPTRERMRAEPAADGVGAASRDLEKGAISSNTAATNAACAWLEAQEEEVGFVTPQV  
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VPVEPDKVEEANKGENTSLLHPVSLHGMDPEREVLEWRFDSSLAFHHVARELHPEYFKNCTSEPVDPRL  
PWKHPGSQPKTACTNCYCKCCFHQCQCFITAALGISYGRKKRRQRRPPQGSQTHQVSLSKQPTSQSKE  
PTGPKE [SEQ ID NO: 69]

**Figure 14**

pRix40



## DNA sequence of insert

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 CGGACCCCACCCCCAGGAGGTGGTGGAAACGTGACCGAGTAATTCAACATGTGGAAGAATAACATG  
 GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACCAGTCCCTGAACGCCCTGCGTGAAGCTGACGCC  
 TCTCTGCGTACACTGAGCTGTGACGACGTCAACACCAACAGCACTACCACCACAGCAACGGCTGGA  
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 CAAGACGACCGTAATTTCAGACTCATTCACTGCAACAGCAGCGTCATGACGCAGGCCCTGCCCCAAGGTGT  
 CCTTCGAACCAATCCCATCCATTACTGTGCCCTGCGGATTGCGATCCTCAAGTGTAAACAACAAGACC  
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 CACCCAGCTGCTGCTGAACGGGCTGGCTGAGGAGGAGGTGGTATCCGGTGGACAACCTCATGGACA  
 ACACCAAGACAATCATCGTCCAGCTGAACGAGTCTGTGGGATTAACTGTACCCGCCCTAACAAACAACACC  
 CGTAAGGGCATCCACATCGGCCCTGGACGGCCCTCTATGCCGCCGCAAGATCATCGCGACATCGGCCA  
 GGCCCATTGCAACCTCTCCGCCAGTGGAAATAACACCCCTGAAGCAGATCGTATCAAGCTGAGAGAGC  
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 AACTGCGGGGGCGAGTTCTCTACTGCGATACGACACAGCTCTCAACTCCACCTGGAACGGCACCGAGGG  
 CAACAACACAGAGGGAAACTCCACTATCACCCCTCCCTGCGCATCAAGCAGATCATCAACATGTGGCAGG  
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 CGCGACATGAGGGATAACTGGGGAGCGAGCTGTACAAGTACAAGGTGGTAAGGGTGGAGGCC  
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 AGATCCTGGGCAATTGCAAGCCATCCCTCCAGACCGGGAGTGAAGAGCTGAGGTCTGTATAACACAGTG  
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 GGAGCAAAACAAGAGCAAGAAGAAGGCCAGCAGGAGCTGCTGACACTGGCATAGCAACCAGGTATCAC  
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 GCCTGGGTGAAGGGTGTGCAAGAGAAGGCCCTTCTCTGAGGTTATCCCCATGTTCTCCGCTTGGAGTGA  
 GGGGCCACTCCTCAGGACCTCAATACTGCTTAATACCGTGGCGGCCATCAGGCCCATGCAAATGT  
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**Figure 14 continued**

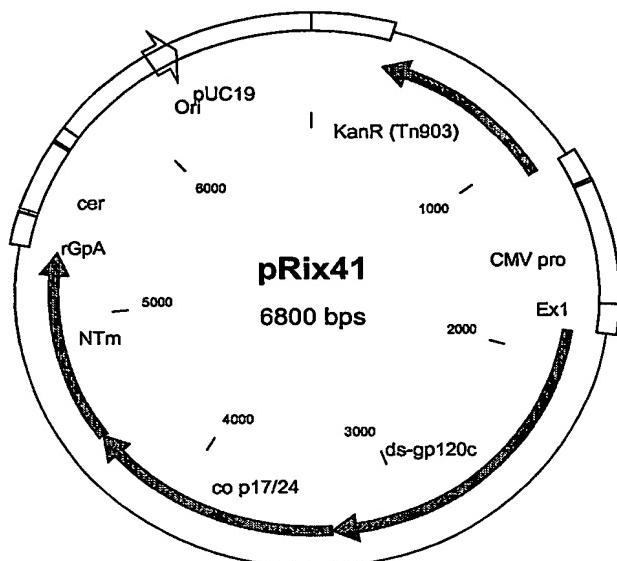
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 ACAGGCCGAAGGAATAA [SEQ ID NO: 70]

**Aminoacid sequence of insert**

MAEQLWVTVYYGVPVKEATTLFCASDAKAYDTEVHNWATHACVPTDPNPQEVLGNVTEYFNMWKNNM  
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 QKEYALFYNLDVVPIDDDNATTNKNTTRNFRLIHCNSVMTQACPKVSFEPIPIHYCAPAGFAILKCNNKT  
 FDGKGLCTNVSTVQCTHIGRPVVSTQLLLNGSLAEEEVIRSDNFMDNTKTIIVQLNESVAINC TRPNNN  
 RKGHIHGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTQLFNSTWNGTEGNNTEGNSTILPCRICKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGTECNGTENETEIFRPGGDMRDNWRSLEYKYKVVKVEPLGVAPTRAKRRVQRMGARASVLSGG  
 ELDRWEKIRLRPGGKKYKLKHIVWASRELERFAVNPGLETSEGCROILGQLQPSLQTGSEELRSLYNTV  
 ATLYCVHQRIEKDTKEALDKIEEQNKSKKQQAAADTGSNQVSQNYPIVQNIQGQMvhQAI SPRTLN  
 AWVKVVEEKAFSPEVIPMFSASEGATPQDLNTMLNTVGHHQAAMQMLKETINEEEAWDRVHPVHAGPIA  
 PGQMREPRGSDIAGTTSTLQEIQIGWMNNPPIPVGEIYKRWIILGLNKIVRMYSPSTSILDIRQGPKEFRD  
 YVDRFYKTLRAEQASQEVKNWMTEL LVQNANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGK  
 WSKSSVVGWPVRERMRAEPAADGVGAASRDLEKHGAITSNTAATNAACAWLEAQEEEVGFPTPQVP  
 LRPMTYKAADLSHFLKEKGGLGLIHSQRQDILDWIYHTQGYFPDWQNYTPGPGVRYPLTFGWCYKLV  
 PVEPDKVEEANKGENTSSLHPVSLHGMDDPEREVLWRFDSRLAFHVARELHPEYFKNCTSEPVDPRL  
 WKHPGSQPKTACTNCYCKCCFHQCVCFITAALGISYGRKKRQRRPPQGSQTHQVSLSKQPTSQSKE  
 TGPKE [SEQ ID NO: 71]

**Figure 15**

pRix41



## DNA sequence of insert

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 CGGACCCCAACCCCCAGGAGGTGGTGGCTGGGAAACGTGACCGAGTACTTCACATGTGGAAGAATAACATG  
 GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACCGAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC  
 TCTCTGCGTGAACACTGGACTGTGACGACGTCAACACCCACCAACAGCACTACCACCAACAGCAACGGCTGGA  
 CCGGAGAGATTGGAAAGGGCGAGATCAAGAACTGCTCCTTAATATCACGACCTCGATCAGAGACAAGGTG  
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 CAAGACGACGGCTAATTTCAGACTCATTCACTGCAACAGCAGCGTCACTGACGCCAGGCTGCCCCAAGGTGT  
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 TTGCGACGGAAAGGGCTGTGCACCAACGTCAGCACGGTGCAGTCACCCATTGGCATTCCGGCGTGTGAG  
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 ACACCAAGACAATCATCGTCCAGCTGAACGGAGTCTGTGGGATTAAACTGTACCCGCTAAACAACAACACC  
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 GGGCCATTGCAACCTCTCCCGCGCCAGTGGATAAACACCCCTGAAGCAGATCGTGTACAGCTGAGAGAGC  
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**Figure 15 continued**

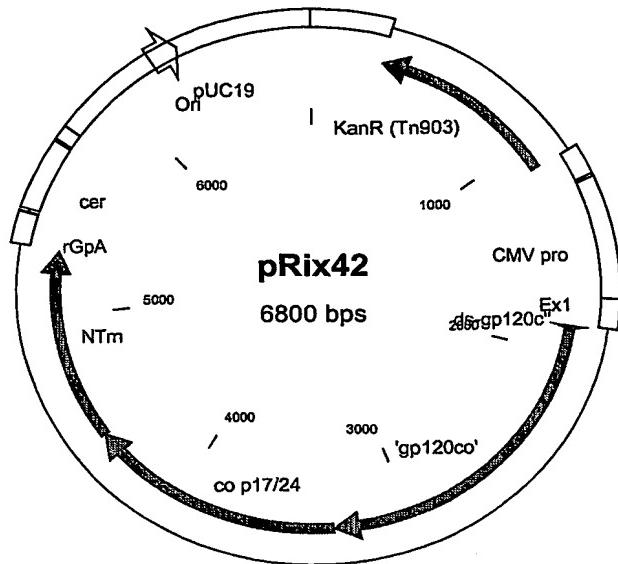
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**Aminoacid sequence of insert**

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 QKEYALFYNLDVVPIDDDNATTNKNTTRNFRLIHCNSVMTQACPKVSFEPIPIHYCAPAGFAILKCNNKT  
 FDGKGLCTNVSTVQCTHDIRPVVSTQLLNGLAEEEVVIRSDNFMDNTKTIIVQLNESVAINCTRPNNT  
 RKGIIHGPGRAFYAARKIIGDIRQAHCNLRSAQWNNTLKQIVIKLREHFGNKTIFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTQLFNSTWNGTEGNNTEGNSTITLPCRICKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGEINGTENETEIFRPGGDMRDNWRSLEYKYKVVKVEPLGVAPTRAKRRVQRMGARASVLSGG  
 ELDRWEKIRLRPGKKYKLKHIVWASRELRFAVNPGLLETSEGRQILGQLQPSLQTGSEELRSLYNTV  
 ATLYCVHQRIEIKDTKEALDKIEEQNKSKKQQAAADTGHSNQVSQNYPIVQNIQGQMVKHQAISPRTLN  
 AWVKVVEEKAFSPEVIPMFSASEGATPQDLNTMLNTVGGHQAMQMLKETINEEAEWDRVHPVHAGPIA  
 PGQMREPRGSDIAGTTSTLQEIQIGWMTNNPIPVGIEYKRWIILGLNKIVRMYSPSTSILDIRQGPKEFRD  
 YVDRFYKTLRAEQASQEVKNWMTETLLVQNANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGG  
 KWSKSSVVGWPTVRERMRAEPAADGVGAASRDLEKHGAITSNTAATNAACAWLEAQEEEVGFPVTPQV  
 PLRPMTYKAAVDLSHFLKEKGGLEGLIHSQRQDILDWLWYHTQGYFPDWQNYTPGPVRYPLTFGWCYKL  
 VPVEPDKVEEANKGENTSALHPVSLHGMDDPEREVLWRFDSRLAFHHVARELHPEYFKNCTSEPVDPRL  
 PWKHPGSQPKTACTNCYCKCCFHQCQVCFITAALGISYGRKKRRQRRPPQGSQTHQVSLSKQPTSQSKE  
 PTGPKE [SEQ ID NO: 73]

**Figure 16**

pRix42

**DNA sequence of insert**

ATGGCGAGCAGCTGTGGTCACCGTCACTACGGCGCTGTGTGGAAGGAGGCCACGACCACCCCTTT  
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 CGGACCCCAACCCCAGGAGGTGGCTGGAAACGTCGACCGAGTACTTCAACATGTGGAAGAATAACATG  
 GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACCAAGTCCTGAAGCCCTGCGTGAAGCTGACGCC  
 TCTCTGCGTGACACTGGACTGTGACGACGTCAACACCCACCAACAGCACTACCACCAACAGCAACGGCTGGA  
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**Figure 16 continued**

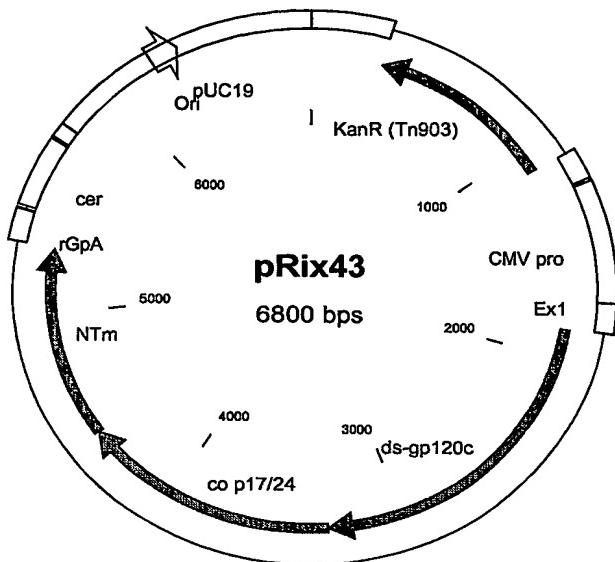
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 TTGCCAAGTTGTTCTAACAGCTGCCTAGGCATCTCTATGGCAGGAAGAAGCGGAGACAGCGACGAA  
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 CCGACAGGCCGAAGGAATAA [SEQ ID NO: 74]

**Aminoacid sequence of insert**

MAEQLWVTVYYGPVWKEATTTLFCASDAKAYDTEVHNWATHACVPTDPNPQEVLGVNVTEYFNMWKNNM  
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 QKEYALFYNLDVVPIDDDNATTNKNTTRNFRLIH CNSVMTQACPKVSFEPIPIHYCAPAGFAILKCNNKT  
 FDGKGLCTNVSTVQCTH GIRPVVSTQLLLNGSLAEEEVIRSDNFMDNTKTIIVQLNESVAINC TRPNNT  
 RKGIIHGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTQLFNSTWNGTEGNNTEGNSTITLPCRICKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGETEGNGTENETEIFRPGGDMRDNRSELYKYKVVKVEPLGVAPTRAKRRVQRMGARASVLSGG  
 ELDRWEKIRLRPGKKYKLKHIVWASRELERFAVNPGLETSEGCRQILGQLQPSLQTGSEELRSLYNTV  
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 PGQMREPRGSDIAGTTSTLQEIQGWMTNNPPIPVGEIYKRWIILGLNKIVRMYSPSTSILDIROGPKEPFRD  
 YVDRFYKTLRAEQASQEVKNWMTEPLLQVNANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGG  
 KWSKSSVVGWPTVRERMRAEPAADGVGAASRDLEKHGAITSSNTAATNAACAWLEAQEEEVGFVTPQV  
 PLRPMTYKAAVDLSHFLKEKGGLLEGLIHSQRRQDILDWIYHTQGYFPDWQNYTPGPGVRYPLTFGWCYKL  
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 PWKHPGSQPKTACTNCYCKCCFHCQVCFITAALGISYGRKKRQRRPPQGSQTHQVSLSKQPTSQS KGE  
 PTGPKE [SEQ ID NO: 75]

**Figure 17**

pRix43



## DNA sequence of insert

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CGTAAGGGCATCCACATCGGCCCTGGACGGGCTTCTATGCCGCCGCAAGATCATCGCGACATCCGGCA
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GGAGCAAACAAAGAGCAAGAAGAAGGCCAGCAGGCAAGCTGCTGACACTGGGATAGCAACCAGGTATCAC
AGAACTATCCTATTGTCAAACATTCAAGGGCCAGATGGTTCATCAGGCCATCAGCCCCGGACGCTCAAT
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**Figure 17 continued**

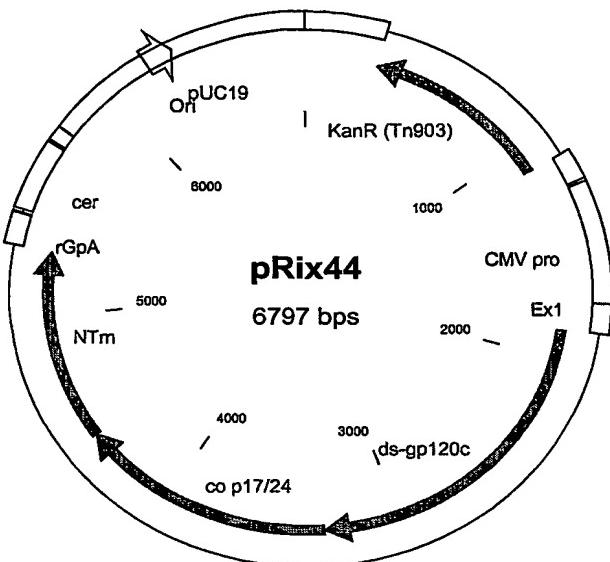
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 CCCCTGGAAGCATCCAGGAAGTCAGCCTAAAACACTGCTTGTACCAATTGCTATTGTAAGGAGTGTGCTTTCA  
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 GACCTCCTCAAGGCAGTCAGACTCATCAAGTTCTATCAAAGCAACCCACCTCCAAATCCAAAGGGAG  
 CCGACAGGCCGAAGGAATAA [SEQ ID NO: 76]

**Aminoacid sequence of insert**

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 VDQMHEIDIISLWDQSLKPCVVLTPLCVTLDCDDVNNTNTTSNGWTGEIRKGEIKNCSFNITTSIRDKV  
 QKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSVMTQACPKVSFEPIPIHYCAPAGFAILKCNNKT  
 FDGKGLCTNVSTVQCTH GIRPVVSTQLLLNGSLAEEEVVIRSDNFMDNTKTIIVQLNESVAINTRPNNNT  
 RKGIIHGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTQLFNSTWNGTEGNNTEGNSTITLPCRICKQIINMWQEVGKAMYAPPIGGQIRCSSLNTGL  
 LLTRDGGEINGTENETEIFRPGGGDMRDNWRSLEYKYKVVKVEPLGVAPTRAKRRVQRMGARASVLSGG  
 ELDRWEKIRLRPGGKKKYKLKHIVWASRELRFANPGLLETSEGRQILGQLQPSLQTGSEELRSLYNTV  
 ATLYCVHQRIEKDTKEALDKIEEEQNKSKKQQAAADTGSNQVSQNYPIVQNIQGQMVMHQAISSRTLN  
 AWVKVVEEKAFSPEVIPMFSALSSEGATPQDLNTMLNTVGGHQAMQMLKETINEEAEWDRVHPVHAGPIA  
 PGQMREPRGSDIAGTTSTLQEIQIGWMTNNPPIPVGEIYKRWIILGLNKIVRMYSPSTSILDIRQGPKEPFRD  
 YVDRFYKTLRAEQASQEVKNWMTETLLVQNANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGG  
 KWSKSSVVGWPTVRERMRAEPAADGVGAASRDLEKHGAITSSNTAATNAACAWLEAQEEEVGFVTPQV  
 PLRPMTYKAVALSHFLKEKGGLIEGLIHSQRQDILDWIYHTQGYFPDWQNYTPGPVRYPLTFGWCYKL  
 VPVEPDKVEEANKGENTSAAHPVSLHGMDDPEREVLWRFDSRLAFHHVARELHPEYFKNCTSEPVDPRL  
 PWKHPGSQPKTACTNCYCKKCCFHQCQVCFTAALGISYGRKKRQRRPPQGSQTHQVSLSKQPTSQSKE  
 PTGPKE [SEQ ID NO: 77]

**Figure 18**

pRix44



## DNA sequence of insert

```

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CGGACCCCCAACCCCCCAGGGAGGTGGTGCTGGGAAACGTGACCGAGTACTTCAACATGTGGAAAGAATAACATG
GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACCAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC
TCTCTGCGTGAACACTGGACTGTGACGACGTCAACACCAACAGCACTACCACCACAGCAACGGCTGGA
CCGGAGAGATTGGAAAGGGCGAGATCAAGAACTGCTCCTTCAATATCACGACCTCGATCAGAGACAAGGTG
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CAAGACGACGCGTAATTCACTGACTGCAACAGCAGCGTATGACGCGCAGGCTGCCCAAGGTGT
CCTTCGAACCAATCCGATCCATTACTGTGCCCCCTGCCGATTGCGATCCTCAAGTGTAAACAACAAGACC
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ACACCAAGACAATCATCGTCCAGCTGAACGGAGTCTGTGGCGATTAACTGTACCCGGCTAACAACAACACC
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GGCCCATTGAACCTCTCCCGCGCCAGTGGATAAACACCCCTGAAGCAGATCGTGAAGCTGAGAGAGC
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GAGCTGGACAGATGGGAGAAAATTAGGCTGCGCCGGAGGCAAAAGAAATACAAGCTCAAGCATACTGT
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GGAGCAAAACAAGAGCAAGAAGAAGGCCAGCGAGCTGCTGACACTGGGCATAGCAACCAGGTATCAC
AGAAACTATCTATTGTCAAAACATTCAAGGGCCAGATGGTTCATCAGGCCATCAGCCCCGGACGCTCAAT
GCTGGGTGAAGGTTGTCGAAGAGAAGGCCCTTCTCCTGAGGTTATCCCCTGTTCTCCGCTTGAGTGA
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**Figure 18 continued**

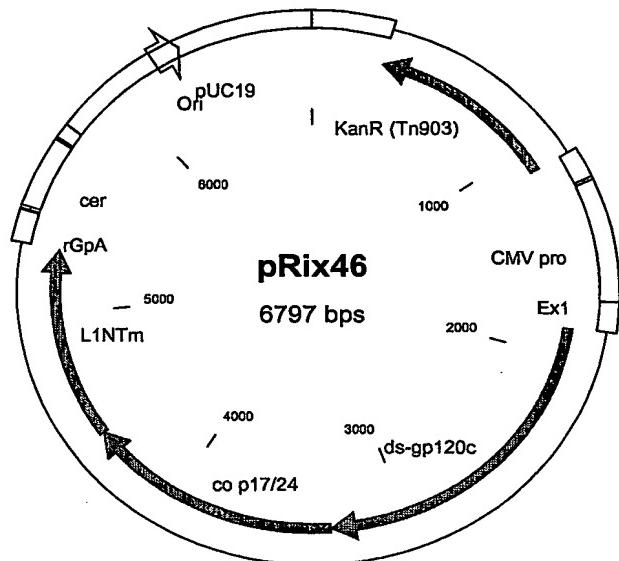
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 ACAGGCCGAAGGAATAA [SEQ ID NO: 78]

**Aminoacid sequence of insert**

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 QKEYALFYNLDVVPIDDDNATTKNKTRRNFRЛИHCNSVMTQACPKVSFEPIPIHYCAPAGFAILKCNNKT  
 FDGKGLCTNVSTVQCTH GIRPVVSTQLLNGSLAEEEVIRSDNFMDNTKIIIVQLNESVAINTRPNNNT  
 RKGИHIGPGRAYAARKIIGDIROQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTTQLFNSTWNGTEGNNTEGNSTITLPCRIKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGEINGTENETEIFRPGGDMRDNRSELYKYKVVKVEPLGVAPTRAKRRVVQRMGARASVLSGG  
 ELDRWEKIRLRPGGKKYKLKHIVWASRELERFAVNPGLETSEGRQILQLQPSLTGSEELRSLYNTV  
 ATLYCVHQRIEIKDTKEALDKIEEEQNKSKKAAQQAADTGHSNQVSQNYPIVQNIQGQMvhQAIISPRTLN  
 AWVKVVEEKAFSPEVIPMFSALSEGATPDLNTMLNTVGGHQAMQMLKETINEAAEWDRVHPVHAGPIA  
 PGQMREPRGSIDIAGTTSTLQEIQIGWMTNNPPIPVGEIYKRWIIILGLNKIVRMYSPSTSILD  
 IRQGPKEPFRD  
 YVDRFYKTLRAEQASQEVKNWMETLLVQANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGK  
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 LRPMTYKAADVLSHFLKEKGGLEGLIHSQRQDILDILWIYHTQGYFPDWQNYTPGPGVRYPLTFGWCYKLV  
 PVEPDKVEEANKGENTSAAHPVSLHGMDDPEREVLEWRFDSSLAFHVARELHPEYFKNCTSEPVDPRL  
 WKHPGSQPKTACTNCYCKCCFHQCVCFITAALGISYGRKKRRQRRPPQGSQTHQVSLSKQPTSQSKEP  
 TGPKE [SEQ ID NO: 79]

**Figure 19**

pRix46



## DNA sequence of insert

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 CGGACCCCACCCCCAGGGAGGTGGTGGAAACGTGACCGAGTACTTCACATGTGGAAGAAATAACATG  
 GTGGATCAGATGACGAGGACATCATCTCTGTGGGACAGTCCCTGAAGGCCCTGCGTAAGCTGACGCC  
 TCTCTGCGTACACTGGACTGTGACGACGTCAACACACCAACAGCACTACCACCAACAGCAACGGCTGGA  
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 CCTTCGAACCAATCCCGATCCATTACTGTGCCCCCTGCCGATTGCGATCTCAAGTGTAAACAACAAGACC  
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 CACCCAGCTGCTGCTGAACGGTCCCTGGCTGAGGAGGAGGTGGTACCGGTCGGACAACCTCATGGACA  
 ACACCAAGACAATCATCGTCCAGCTGAACGGACTGTGGCGATTAACTGTACCCGGCTAACAAACAACACC  
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 GGAGCAAAACAAGAGCAAGAAGAAGGCCAGCAGCGAGCTGCTGACACTGGGATAGCAACCCAGGTATCAC  
 AGAACTATCCTATTGTCCAAAATTCAGGGCCAGATGGTTCATCAGGCCATCAGCCCCGGACGCTCAAT  
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**Figure 19 continued**

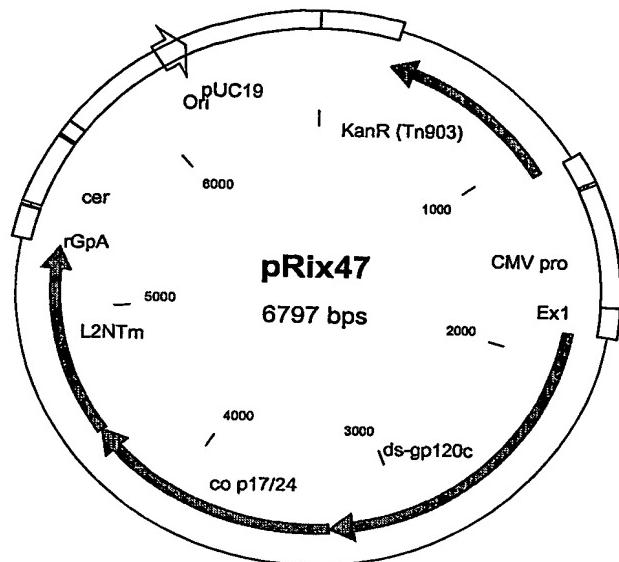
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 ACAGGCCGAAGGAATAA [SEQ ID NO: 80]

## Aminoacid sequence of insert

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 QKEYALFYNLDVVPIDDDNATTKNKTTTRNFRLIH CNSVMTQACPKVSFEPIPIHYCAPAGFAILKCNNKT  
 FDGKGLCTNVSTVQCTH GIRPVVSTQLLLNGSLAEEEVVIRSDNFMDNTKIIIVQLNESVAINC TRPNNT  
 RKGHIHGPGRAYAARKIIGDIRQAHCNLNSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRH  
 NCGGEFFYCDTTQLFNSTWNGTEGNNTEGNSTILPCRICKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGEVNGTENETEIFRPGGGDMRDNRWRSLEYKYKVVKVEPLGVAPTRAKRRVVRQRMGARASVLSGG  
 ELDRWEKIRLRPGGKKYKLKHIVWASRELERFAVNPGLETSECCRQIILGQLQPSLQTGSEELRSLYNTV  
 ATLYCVHQRIEKDTKEALDKIEEQNKSKKAQQAAADTGHSHNQVSQNYPIVQNIQGQMVMQHQAISPRTLN  
 AWVKVVEEKAFSPEVIMFSALSEGATPQDLNTMLNTVGGHQAMQMLKETINEEAEWDRVHPVAGPIA  
 PGQMREPRGSIDIAGTTSTLQEIQIGWMTNNPPIPVGEIYKRWIILGLNKIVRMYSPSILDIRQGPKEPFRD  
 YVDRFYKTLRAEQASQEVKNWMTETLLVQNANPDCKTILKALGPAATLEEMMTACQGVGGPGHKARVLMGK  
 WSKSSVVGWPVRERMRAEPAADGVGAASRDLEKHGAITSNTAATNAACAWLEAQEEEVGFVTPQVP  
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 TGPKE [SEQ ID NO: 81]

**Figure 20**

pRix47

**DNA sequence of insert**

```

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GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC
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```

**Figure 20 continued**

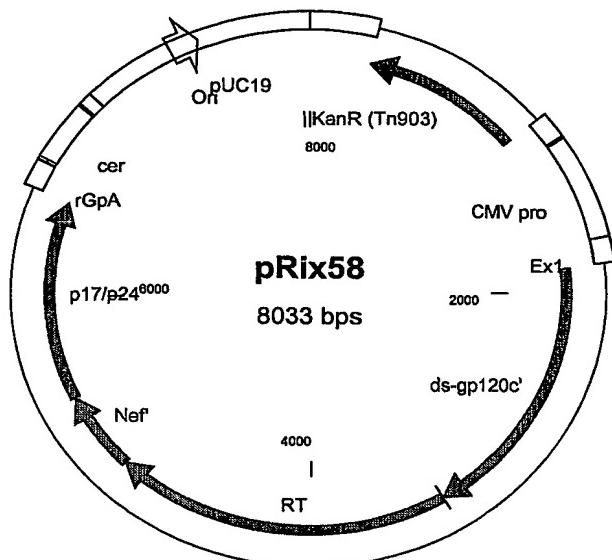
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 ATGGATGACCAACAATCCTCCCATCCCAGTTGGAGAAATCTATAAACGGTGGATCATTCTCGGTCTCAATA  
 AAATTGTTAGAATGTACTCTCCGACATCCATCCTTGACATTAGACAGGGACCCAAAGAGCCTTTAGGGAT  
 TACGTCACCGGTTTATAAGACCTGCGAGCAGAGCAGGCCCTCTCAGGAGGTAAAAACTGGATGACGGA  
 GACACTCCTGGTACAGAACGTAACCCCCGACTGCAAAACAATCTTGAAGGCAGTAGGCCGGCTGCCACCC  
 TGGAAAGAGATGATGACCGCCTGTCAGGGAGTAGGCGGACACAAAGCCAGAGTGTGATGGCAAG  
 TGGTCAAAAAGTAGTGTGGTTGGATGGCTACTGTAAGGGAAAGAATGAGACGAGCTGAGCCAGCAGCAGA  
 TGGGGTGGGAGCAGCATCTCGAGACCTGGAAAAACATGGAGCAATCACAAGTAGCAATACAGCAGCTACCA  
 ATGCTGCTTGTGCTGGCTAGAACGACAAGAGGAGGGAGGTGGGTTTCCAGTCACACCTCAGGTACCT  
 TTAAGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTAAAGAAAAGGGGGGACTGGAAGG  
 GCTAATTCACTCCCAACGAAGACAAGATATCCTTGATCTGTGGATCTACCACACACAAGGCTACTCCCTG  
 ATTGGCAGAACTACACACCAGGGCCAGGGTCAGATATCCACTGACCTTGATGGTGTACAAGCTAGTA  
 CCAGTTGAGCCAGATAAGGTAGAACAGGGCAATAAGGAGAGAACACCAGCTGGCACACCCCTGTGAGCCT  
 GCATGGAATGGATGACCTGAGAGAGAAGTGTAGAGTGGAGGTTGACAGCCGCCTAGCATTCTACACG  
 TGGCCCGAGAGCTGCATCCGGAGTACTTCAAGAACTGCACTAGTGAGCCAGTAGATCTAGACTAGAGCCC  
 TGGAAGCATCAGGAAGTCAGCCTAAAACGTCTGTACCAATTGCTATTGTAAGGAGCTTGTGCTTCATTG  
 CCAAGTTGTTTCATAACAGCTGCCTTAGGCATCTCTATGGCAGGAAGAGCGGAGACAGCGACGAAGAC  
 CTCCCTCAAGGCAGTCAGACTCATCAAGTTCTCTATCAAAGCAACCCACCTCCCAATCCAAGGGAGCCG  
 ACAGGCCGAAGGAATAA [SEQ ID NO: 82]

**Aminoacid sequence of insert**

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 QKEYALFYNLDVVPIDDDNATTNKTKTRNFRЛИHCNSSVMTQACPKVSFEPPIHYCAPAGFAILKCNNKT  
 FDGKGLCTNVSTVQCTHIGRPVVSTQLLLNGSLAEEEVVIRSDNFMDNTKTIIVQLNESVAINCRPNNN  
 RKGHIHGPGRAYAARKIIGDIRQAHCLNSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTTQLFNSTWNGTEGNNTEGNSTITLPCRICKQIINMMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGTEGNGTENETEIFRPGGGDMRDNWRSLEYKYKVVKEPLGVAPTRAKRRVQRMGARASVLSGG  
 ELDRWEKIRLRPGGKKYKLKHIVWASRELERFAVNPGLETSEGCRQILGQLQPSLQTGSEELRSLYNTV  
 ATLYCVHQRIEIKDTKEALDKIEEEQNKSKKQAQQAADTGHSNQVSQNYPIVQNIQGQMVKHQAI  
 SPRTLN  
 AWVKVVEEKAFSPEVIPMFSALSEGATPQDLNTMLNTVGGHQAMQMLKETINEEAEWDRVHPVHAGPIA  
 PGQMREPRGSIDIAGTTSTLQEIQIGWMTNNPIPVGEEYKRWIILGLNKIVRMYSPSTSILD  
 DIRQGPKEPFRD  
 YVDRFYKTLRAEQASQEVKNWMETLLVQNANPDCKTILKALGPATLEEMMTACQGVGGPGHKARVLMGK  
 WSKSSVVGWPVRERMRAEPAADGVGAASRDLEKHGAITSNTAATNAACAWLEAQEEE  
 EVGFVTPQVP  
 LRPMTYKAADVLSHFLKEKGGLLEHQSQRQDILDWIYHTQGYFPDWQNYTPGPGVRYPLTFGWCYKLV  
 PVEPDKVEEANKGENTSLAHPVSLHGMDDPEREVLEWRFDRLAFHVARELHPEYFKNCTSEPVDPRL  
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 TGPKE [SEQ ID NO: 83]

**Figure 21**

pRix58



## DNA sequence of insert

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 CGGACCCCACCCCCAGGAGGTGGCTGGAAACGTGACCGAGTACTTCACATGTGGAAGAATAACATG  
 GTGGATCAGATGCACGAGGACATCATCTCTGTGGGACCAAGTCCCTGAAGCCCTGCGTGAAGCTGACGCC  
 TCTCTGCGTGAACACTGGACTGTGACGACGTCAACACCAACAGCACTACCACCACAGCAACGGCTGGA  
 CCCGAGAGATTGGAAGGGCGAGATCAAGAACTGCTCTTCAATATCACGACCTCGATCAGAGACAAGGTG  
 CAGAAGGAATACGCGCTGTTTATAATCTCGATGTGGTCCCCTGACGACGACAATGCCACCACCAAGAA  
 CAAGACGACCGTAATTTCAGACTCATTCACTGCAACAGCAGCGTCACTGACGCGAGGCTGCCCAAGGTGT  
 CCTTCGAACCAATCCCGATCCATTACTGTGCCCTGCCGATTCGCGATCCTCAAGTGTAAACAACAAGACC  
 TTGACGGGAAGGGCTGTGACCAACGTCAGCACGGTGCAGTGCACCCATGGCATCCGCCCGTGTGAG  
 CACCCAGCTGCTGCTGAACGGGCTGGCTGAGGAGGAGGTGGTATCCGGTGGACAACCTCATGGACA  
 ACACCAAGACAATCATCGTCCAGCTGAACGAGTCTGGCGATTAACTGTACCCGGCTAACAAACAACACC  
 CGTAAGGGCATCCACATCGGGCTGGACGGCCTTCTATGCCGCCGCAAGATCATCGCGACATCCGGCA  
 GGCCCATTGAACCTCTCCCGGCCAGTGGAAATAACACCCCTGAAGCAGATCGTGTCAAGCTGAGAGAGC  
 ACTTTGGAAACAAGACCATCAAGTTCAATCAGAGTTCTGGCGAGACCCCGAGATCGTGGGACTCCTTC  
 AACTCGGGGGCGAGTTCTTCTACTGCGATACGACACAGCTTCAACTCCACCTGGAACGGCACCGAGGG  
 CAACAACACAGAGGGAAACTCCACTATCACCCCTTGCGCATCAAGCAGATCATCAACATGTGGCAGG  
 AGGTGGAAAGGCATGTATGCCCTCCCATCGGGGCCAGATCCGCTGCTCCTCCAACATCACCGGCTG  
 CTGCTCACAGAGACGGGGCACCGAGGGCAACGGCACGGAGAACGAGACGGAGATCTCAGGCCCCTG  
 CGCGACATGAGGGATAACTGGCGAGCGAGCTGTCAAGTACAAGGTGGTAAGGTGGAGCCGCTGGCG  
 TGGCCCCACCCGGCCAAGCGCCGCGTGCAGAGAATGGGCCCATCAGTCCCATCGAGACCGTGGCG  
 GTGAAGCTGAAACCCGGGATGGACGGCCCAAGGTCAAGCAGTGGCCACTCAGGAGGAGAACGAGATCAAGG  
 CCTGGTGGAGATCTGACCGAGATGGAGAAAGAGGGCAAGATCAGCAAGATCGGGCTGAGAACCCATACA  
 ACACCCCGTGTGGCATCAAGAAGAACGACAGCACCAAGTGGCGCAAGCTGGGATTTCGGGAGCTG  
 AATAAGCGGACCCAGGATTCTGGGAGGTCCAGCTGGCATCCCCCATCGGGCCTGAGAACAGAAAGA  
 GAGCGTGAACCGTGTGGACGTGGCGACGCTTACTTCAGCGTCCCTCTGGACGAGGACTTAGAAAGTACA  
 CCGCCTTACCATCCCATCTATCAACAAACGAGACCCCTGGCATCAGATATCAGTACAACGTCCTCCCCCAG  
 GGCTGGAAGGGCTCTCCGCCATTTCAGAGCTCCATGACCAAGATCCTGGAGCCGTTTGGGAAGCAGAA  
 CCCCAGATATCGTCATCTACCAAGTACATGGACGACCTGTACGTGGCTCTGACCTGGAAATCGGGCAGC

**Figure 21 continued**

GCACGAAGATTGAGGGCTGAGGCAGCATCTGCTGAGATGGGCCTGACCCTCCGACAAGAACATCAG  
 AAGGAGCCGCCATTCTGAAGATGGCTACGAGCTCCATCCCAGACAAGTGGACCGTGAGCCTATCGTCCT  
 CCCGAGAAGGACAGCTGGACCGTGAACGACATCCAGAAGCTGGCAAGCTCAACTGGCTAGCCAGA  
 TCTATCCCAGGATCAAGGTGCGCCAGCTCTGCAAGCTGCTGCGCCACCAAGGCCCTGACCGAGGTGATT  
 CCCCTCACGGAGGAAGGCCAGCTGAGCTGGCTGAGAACCGGGAGATCTGAAGGAGGCCGTGACGGCGT  
 GTACTATGACCCCTCCAAGGACCTGATGCCGAAATCCAGAAGCAGGGCAGGGCAGTGGACATACCAAGA  
 TTACCAAGGAGCCTTCAAGAACCTCAAGACCGCAAGTACGCCGATGAGGGCGCCACACCAACGAT  
 GTCAAGCAGCTGACCGAGGCCGTCAGAAGATCACGACCGAGTCCATCGTATCTGGGGAAAGACACCCAA  
 GTCAAGCTGCCTATCCAGAAGGAGACCTGGAGACGTGGTGGACCGAATATTGGCAGGCCACCTGGATT  
 CCGAGTGGAGTCGTGAATACACCTCTGGTGAAGCTGTGGTACAGCTGAGAAGGAGGCCATCGTG  
 GGCAGGGAGACATTCTACGTGGACGGCGCCAGACCCGAAACAAAGCTGGGAAGGCCGGTACGTAC  
 CAACCGGGGCCAGAAGGTGTCACCCCTGACCGACACCACCAACAGAAGACGGAGCTGCAGGCCATCT  
 ATCTCGCTCTCCAGGACTCCGGCTGGAGGTGAACATCGTACGGACAGCAGTACGCCGTGGCATTATT  
 CAGGCCAGCCGGACCAGTCCGAGAGCGAAGTGGTAACCAGATTATCGAGCAGCTGATCAAGAAAGAGAA  
 GGTCTACCTCGCTGGTCCCGGCCATAAGGGCATTGGCGCAACGAGCAGGTGACAAGCTGGTAGTG  
 CGGGGATTAGAAAGGTGCTGATGGTGGTTCCAGTCACACCTCAGGTACCTTTAAGACCAATGACTTAC  
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 CAGGGCCAGGGTCAGATATCCACTGACCTTGGATGGTGCTACAAGCTAGTACCGAGTGGAGACAGATAAG  
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 GGAGAGAGAAGTGTAGAGTGGAGGTTGACAGCCGCTAGCATTCACTACGTGGCCGAGAGCTGCATC  
 CGGAGTACTCAAGAACCTGCATGGGTGCCGAGCTCGGACTGCTCTGGAGAGCTGGACAGATGGAG  
 AAAATTAGGCTGCCCCGGAGGCAAAAAGAAATACAAGCTCAAGCATATCGTGTGGCCTCGAGGGAGCT  
 TGAAACGGTTGCGGTGAAACCAGGCTGCTGAAACATCTGAGGGATGTCGCCAGATCTGGGCAATTGC  
 AGCCATCCCTCCAGACGGGAGTGAAGAGCTGAGGTCTTGATAACACAGTGGCTACCCCTACTGCGTA  
 CACCAGAGGATCGAGATTAAGGATACCAAGGAGGCTGGACAAAATTGAGGAGGAGCAAAACAAGAGCAA  
 GAAGAAGGCCAGCAGCAGCTGACACTGGCATAGCAACCAGGTATCACAGAACTATCCTATTGTCC  
 AAAACATTAGGGCCAGATGGTCATCAGGCCATCAGCCCCGGACGCTCAATGCCCTGGTGAAAGGTTGTC  
 GAAGAGAAGCCTTCTCTGAGGTTATCCCATGTTCTCGCTTGAGTGAGGGGCCACTCTCAGGA  
 CCTCAATACAATGCTTAATACCGTGGCGGCCATCAGGCCATGCAAATGTTGAAGGAGACTATCAACG  
 AGGAGGAGCCGAGTGGACAGAGTGCATCCGTCACGCTGGCCAATCCGCCCCGGACAGATGCCGGAG  
 CCTCGCGCTCTGACATTGCCGACCACCTCTACACTGCAAGAGCAAATGGATGGATGACCAACAATCC  
 TCCCATCCAGTTGGAGAAATCTATAAACGGTGGATCATCCCTGGCCTGAAACAAGATGTGCGCATGTACT  
 CTCCGACATCCATCCTGACATTAGACAGGGACCCAAAGAGCCTTTAGGGATTACGTCGACCGTTTAT  
 AAGACCCCTGCGAGCAGAGCAGGCTCTCAGGAGGTAAAAACTGGATGACGGAGACACTCCTGGTACAGAA  
 CGCTAACCCGACTGCAAAACAACTTGAAGGCACTAGGCCGGCTGCCACCTGGAGAGATGATGACCG  
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**Aminoacid sequence of insert**

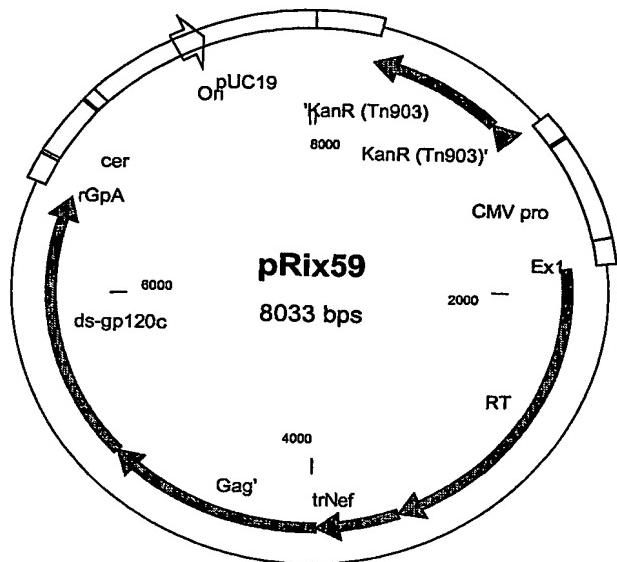
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 QKEYALFYNLDVVPIDDDNATTKNKTRRNFRLIHCNSSVMTQACPKVSFEPIPIHYCAPAGFAILKCNNKT  
 FDGKGLCTNVSTVQCTHIGRPVVSTQLLNGSLAEEEVVIRSDNFMDNTKIIIVQLNESVAINC TRPNNT  
 RKGHIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIKFNQSSGGDPEIVRHSF  
 NCGGEFFYCDTTQLFNSTWNGTEGNNTENSTILPCRICKQIINMWQEVGKAMYAPPIGGQIRCSSNITGL  
 LLTRDGGTEGNGTENETEIRPAGGGDMRDNRWRSLEYKKVVKVEPLGVAPTRAKRRVQRMGPISPIETVP  
 VKLPGMDGPVKQWPLETEEKIKALVEICTEMKEGKISKIGPENPYNTPVFAIKKDSTKWRKLVDREL  
 NKRTQDFWEVQLGIPHPAGLKKKSVTLDVGDAYFSVPLDEDFRKYTAFTIPSINNETPGIRYQYNVLPQ  
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 KEPPFLKMGYELHPDKWTVQPIVLPKEKDSWTVNDIQQLVKGKLNWASQIYPGIKVRQLCKLLRGTKALTEVI  
 PLTEEAELELAENREILKEPVHGVVYDPSKDLIAEIQKQGQGWTYQIYQEPFKNLKTGKYARMRAHTND  
 VKQLTEAVQKITTESIVIWGKTPFKLPIQKETWETWTEYQWATWIPEWEFVNTPPLVKLWYQLEKEPIV  
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**Figure 21 continued**

QAQPDQSESELVNQIIEQLIKKEKVYLAWPAHKIGGGNEQVDKLVSA  
GIRKVLVGMFPVTPQVPLRPMTY  
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PGPGVRYPLTFGWCYKLVPVEPDK  
VEEANKGENTSLLHPVSLHGMDDPEREVLEWRFDSRLAFHHVAREL  
HPEYFKNCM GARASVLSGGELDRWE  
KIRLRPGGKKYKLKHIVWASRELERFAVNPGLETSEGCRQILGQL  
QPSLQTGSEELRSLYNTVATLYCV  
HQRIEIKDTKEALDKIEEEQNKSKKQQAAADTGHSNQVSQNYPIV  
QNIQGQM VHQAIS PRTLNAWVKVV  
EEKAFSPEVIPMFALSEGATPQDLNTMLNTVGGHQAAAMQML  
KETINEAAEWRVHPVHAGPIAPGQMRE  
PRGSDIAGTTSTLQEIQIGWMTNNPPIPVG  
GEIYKRWIILGLNKIVRMYSP  
TSILD  
IRQGP  
KEPFRDYVDRFY  
KTLRAEQASQEVKNWMTE  
TLLVQ  
QANPDCKTIL  
KALGPAATLE  
EMMTACQGVGGPGHKARVL [SEQ ID  
NO: 85]

**Figure 22**

pRix59

**DNA sequence of insert**

ATGGGCCCATCAGTCCCATCGAGACCCTGCCGGTGAAGCTGAAACCCGGATGGACGGCCCCAAGGTCAA  
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 CATCCCCCATCCGGCCGGCTGAAGAAGAAGAGCGTGACCGTGCTGGACGTGGCGACGCTTACTTCA  
 GCGTCCTCTGGACGAGGACTTTAGAAAGTACACCGCCTTACCATCCCCTATCAACAACGAGACCCCT  
 GGCATCAGATATCAGTACAACGTCTCCCCCAGGGCTGGAAGGGCTCTCCGCCATTTCAGAGCTCCAT  
 GACCAAGATCTGGAGCCGTTCGGAAGCAGAACCCGATATCGTCATCTACCAAGTACATGGACGACCTGT  
 ACCTGGGCTCTGACCTGAAATCGGGCAGCATCGCACGAAGATTGAGGAGCTGAGGCAGCATCTGCTGAGA  
 TGGGGCCTGACCCTCCGGACAAGAACGATCAGAAGGAGCCGCCATTCCCTGAAGATGGCTACGAGCTCCA  
 TCCCGACAAGTGGACCGTGCAGCCTATCGTCTCCCCGAGAAGGACAGCTGGACCGTGAACGACATCCAGA  
 AGCTGGTGGGCAAGCTCAACTGGCTAGCCAGATCTATCCGGGATCAAGGTGCGCCAGCTCTGCAAGCTG  
 CTGCGCGCACCAAGGCCCTGACCGAGGTGATTCCCCTCACGGAGGAAGCCGAGCTCGAGCTGGCTGAGAA  
 CGGGGAGATCTGAAGGAGCCCGTGCACGGCGTGTACTATGACCCCTCCAAGGACCTGATGCCGAAATCC  
 AGAACGAGGGCAGGGCAGTGGACATACCAGATTACAGGAGCCTTCAAGAACCTCAAGACGGCAAG  
 TACGCCGCATGAGGGCGCCACACCAACGATGTCAAGCAGCTGACCGAGGCCGTCCAGAACATACGAC  
 CGAGTCCATCGTATCTGGGAAAGACACCCAAGTTCAAGCTGCCATTCCAGAACGGAGACCTGGGAGACGT  
 GGTGGACCGAATATTGGCAGGCCACCTGGATTCCCGAGTGGAGTTCTGTGAATACACCTCTGGTGAAG  
 CTGTGGTACCTCGAGAACGGAGCCATCGTGGCGCGAGACATTCTACGTGGACGGCGGCCAACCG  
 CGAAACAAAGCTGGGAAGGCCGGTACGTACCAACCGGGGCCAGAACGGTGTGACCCCTGACCGACA  
 CCACCAACCAGAACGAGCTGCAGGCCATCTATCTCGCTCTCAGGACTCCGGCTGGAGGTGAACATC  
 GTGACGGACAGCCAGTACCGCTGGCATTATTCAAGGCCAGCCGAGACTCCGAGAGCGAACCTGGTGAAG  
 CCAGATTATCGAGCAGCTGATCAAGAAAGAGAACGGTCTACCTCGCTGGTCCGGCCATAAGGCATTG  
 GCGGCAACGAGCAGGTGACAAGCTGGTGAGTGCAGGGATTAGAACGGTGTGATGGTGGTTTCCAGTC  
 ACACCTCAGGTACCTTAAGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTAAAAGAAAA  
 GGGGGGACTGGAAGGGCTAATTCACTCCAAAGAACAGAACAGATATCCTTGATCTGTGGATCTACACACAC  
 AAGGCTACTTCCCTGATTGGCAGAACTACACACCAGGGCCAGGGGTCAAGATATCCACTGACCTTGGATGG  
 TGCTACAAGCTAGTACCAAGTTGAGGCCAGATAAGGTAGAACGGCAATAAAAGGAGAGAACACCAGCTTGTGTT  
 ACACCCCTGTGAGCCTGCATGGGATGGATGACCCGGAGAGAGAACAGTGTAGAGTGGAGGTTGACAGCCGCC

**Figure 22 continued**

TAGCATTTCATCACGTGGCCCGAGAGCTGCATCCGGAGTACTCAAGAACCTGCATGGGTGCCCGAGCTTCG  
 GTACTGTCTGGTGGAGAGCTGGACAGATGGGAGAAAATTAGGCTGCGCCGGGAGGCAAAAAGAAATACAA  
 GCTCAAGCATATCGTGTGGCCTCGAGGGAGCTGAACGGTTGCGTGAAACCAGGCCCTGCTGAAACAT  
 CTGAGGGATGTCGCCAGATCCTGGGCAATTGCAGCCATCCCTCCAGACCGGGAGTGAAGAGCTGAGGTCC  
 TTGTATAACACAGTGGTACCCCTACTGCCTACACCAAGAGGATCGAGATTAAGGATACCAAGGAGGCC  
 GGACAAAATTGAGGAGGAGCAAACAAGAGCAAGAAGAAGGCCAGCAGGAGCTGCTGACACTGGGCATA  
 GCAACCAGGTATCACAGAACTATCCTATTGCAAAACATTAGGGCCAGATGGTCATCAGGCCATCAGC  
 CCCCGGACGCTCAATGCCCTGGGTAAGGTTGCGAAGAGAAGGCCCTTCCTGAGGTTATCCCCATGTT  
 CTCCGCTTGAGTGAGGGGCCACTCCTCAGGACCTCAATACAATGCTTAATACCGTGGCGGCCATCAGG  
 CGCCATGCAAATGTTGAAGGAGACTATCAACGAGGAGCAGCCAGTGGACAGAGTGCATCCGTCCAC  
 GCTGGCCAATCGGCCGGACAGATGCGGGAGCCTCGCGCTGACATTGCCGGACCACCTCTACACT  
 GCAAGAGCAAATCGGATGGATGACCAACAATCCTCCATCCCAGTTGGAGAAATCTATAACGGTGGATCA  
 TCCGGCCTGAACAAGATCGTGCATGACTCTCGACATCCATCCTGACATTAGACAGGGACCCAAA  
 GAGCCTTTAGGATTACGTCGACCGTTTATAAGACCTGCGAGCAGAGCAGGCCCTCAGGAGGTCAA  
 AAACCTGGATGACGGAGACACTCCTGGTACAGAACGCTAACCCGACTGCAAACAAACATCTGAAGGCAC  
 TAGGCCGGCTGCCACCCTGGAAGAGATGATGACCGCCTGTCAGGGAGTAGGCGGACCCGGACACAAAGCC  
 AGA GTGTTGATGCCGAGCAGCTGTGGGTACCGTCTACTACGGCGTGCCTGTTGGAAGGAGGCCAGGAC  
 CCTCTCTCGCGAGGCCAACGGCTACGACACGGAAAGTGCATAACGTCGATGGGGAGCCATGCTTGCG  
 TGCCCTACGGACCCCAACCCCCAGGAGGTGGTCTGGAAACGTGACCGAGTACTTCACATGTGGAAGAAT  
 AACATGGTGGATCAGATGACGAGGACATCATCTCTGTGGGACAGTCCCTGAGGCCCTGCGTGAAGCT  
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 GCTGGACCGAGAGATCGGAAGGGCAGATCAAGAACACTGCTCCCTCAATATCACGACCTCGATCAGAGAC  
 AAGGTGCAGAAGGAATACGCGTGTAACTATCTCGATGTGGTCCCCATCGACGAGACAATGCCACCAC  
 CAAGAACAGACGACCGTAATTCACTGCAACACAGCAGCGTCAACGCCGAGGCTGCC  
 AGGTGTCCTCGAACCAATCCGATCCATTACTGTGCCCTGCCGGATTCCGATCCTCAAGTGTAA  
 AACACAGACGACGCCATTCCGATCCACATCGGCCCTGGACGGGCTTCTATGCCGCCGCAAGATCATCGCG  
 AACATCCGTAAGGGCATCCACATCGGCCCTGGACGGGCTTCTATGCCGCCGCAAGATCATCGCG  
 CCGGCAGGCCATTGCAACCTCTCCGCGCCAGTGGAAATAACACCCCTGAAGCAGATCGTGAAGCTGA  
 GAGAGCACTTGGAAACAAGACCATCAAGTTCAATCAGAGTTCTGGCGAGACCCCGAGATCGTGC  
 CGCAC TCCCTCAACTGCGGGGGCGAGTTCTACTGCGATAACGACACAGCTTCAACTCCAC  
 CGAGGGCAACAAACACAGAGGAAACTCCACTATCACCCCTCCCTGCCGCATCAAGCAGATCATCA  
 AACATGTGGAGGAGGTGGGAAAGGCCATGTATGCCCTCCATCGGGGGCCAGATCCGCTGCT  
 CCTCAACATCACCCTGCTGCCACCGAGGGCAACGGCACGGAGAACGAGACGGAGATCTCAGGCC  
 CGGGCGGGGACATGAGGGATAACTGGCGGAGCGAGCTGTACAAGTACAAGTGGTGAAGGTGGAGGCC  
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**Aminoacid sequence of insert**

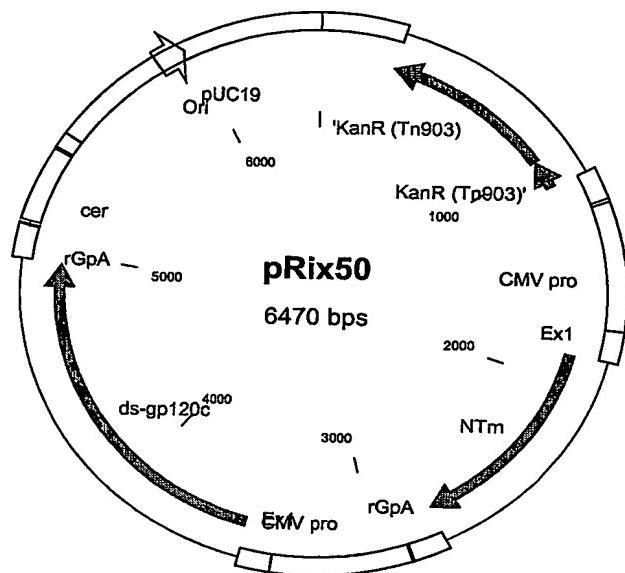
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 KWRKLVDLFRELNKRTQDFWEVOLGIHPAGLKKKSVTLDVGDAYFSVPLDEDFRKYTAFTIPSINNETP  
 GIRYQYNVLPGWKGSPAIFQSSMTKILEPFRKQNPDIVIYQYMDDLYVGSDELIGQHRTKIEELRQHLLR  
 WGLTPDPKKHQKEPPFLKMGYELHPDKWTVQPIVLPKEDSWTVNDIQKLVGKLNWASQIYPGIKVQLCKL  
 LRGTKALTEVIPLTEEALELAENREILKEPVHGVVYDPSKDLIAEIQKQGQWTYQIYQEPFKNLKTGK  
 YARMRAHTNDVKQLTEAVQKITTESIVIWGKTPKFKLPIQKETWETWWTEYWQATWIPEWEFVNTPPLVK  
 LWYQLEKEPIVGAETFYVDGAANRETKLKGAGYVTNRGRQKVVTLDTTNQKTELQAIYLALQDSGLEVN  
 I VTD SQY ALGI IQA QPD QSE SELVNQII EQL I KKE KVY LAW VP AH K GIGGNEQVDKLVSAGIRK  
 VL MVGF PV TPQVPLRPMTYKA AV DLSHFLKEKGLEG L I HSQR QDILD L WIYHTQGYFPDWQNYTP  
 GPGVRYPLTFGW CYKL VP VE PD KVEEANK GENTSLH P VSLH GMDD PERE VLE WRFD SRLA  
 FHH VARE LH PEY FKNC M GAR AS VLSGGELDRWEKIRL RP GKK KYKL KHIV WAS RE  
 LER FAV NPG LLET SE GCR QI LGQ L QPSL QTG SE EL RS LY NT VAT LY CV H  
 QRIEIKDTKEALDKIEEEQNKSKKQQAAADTGH SNQ VS QN YPIV QN I QGQ MVH Q A IS  
 PRTLNAWVKVVEEKAFSPEVIPMFSALSEGATPQDLN TMLNTVGGHQAMQMLKETINEEAEWDRV  
 H PVH APIAPGQMREPRGSDIAGTTSTLQE QIGWMTNNPPIP VGEIYKRWIILGLNKIVR  
 MYSPTSILDIRQGPK EPFRDYVDRFYKTLRAEQASQEVKNWMTE TLLVQNANPDCKTILKALGPA  
 ATLEEMMTACQGVGGPGHKAR

**Figure 22 continued**

VLMAEQLWVTVYYGVPVWKEATTTLFCASDAKAYDTEVHNWATHACVPTDPNPQEVLGNVTEYFNMWKN  
NMVDQMHEIIISLWDQSLKPCVKLTPLCVTLDCCDVNTTNSTTTSNGWTGEIRKGEIKNCSFNITTSIRD  
KVQKEYALFYNLDVVPIDDDNATTKNKTTRNFRLIHCNSSVMTQACPVSFEPIPIHYCAPAGFAILKCNN  
KTFDGKGLCTNVSTVQCTH GIRPVVSTQLLLNGSLAEEEVVI RSDNFMDNTKTIIVQLNESVAINCTRPN  
NTRKG I HIGPGRAFYAARKIIGDIRQAHCNLSRAQWNNTLKQIVIKLREHFGNKTIFNQSSGGDPEIVRH  
SFNC GGEFFYCDTTQLFNSTWNGTEGNNT EGNSTITLPCRIKQJINMWQEVGKAMYAPPIGGQIRCSSNIT  
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NO: 87]

**Figure 23**

pRix50

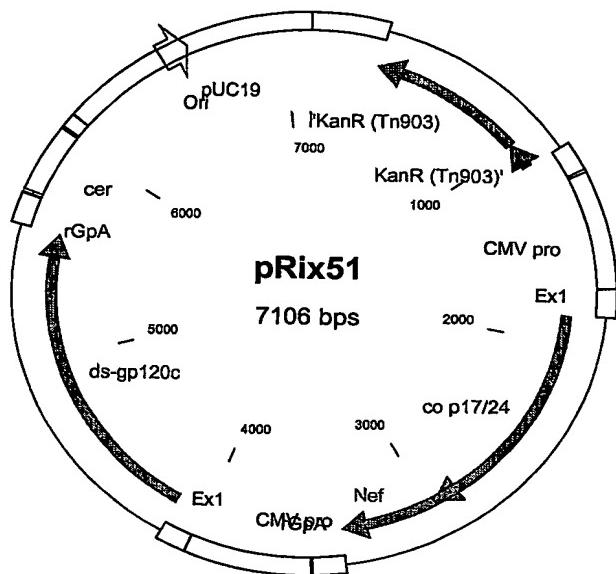


DNA and amino acid sequences of inserts:

Identical to pNTm and pRix12

**Figure 24**

pRix51

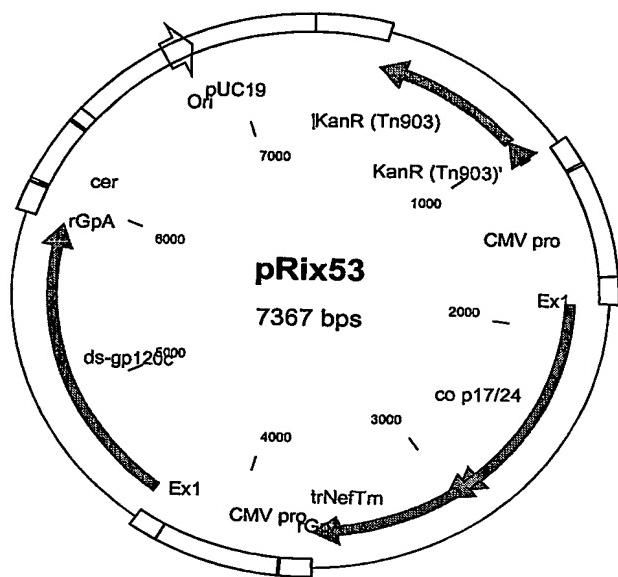


DNA and amino acid sequences of inserts:

Identical to p73I-GN2 and pRix12

**Figure 25**

pRix53

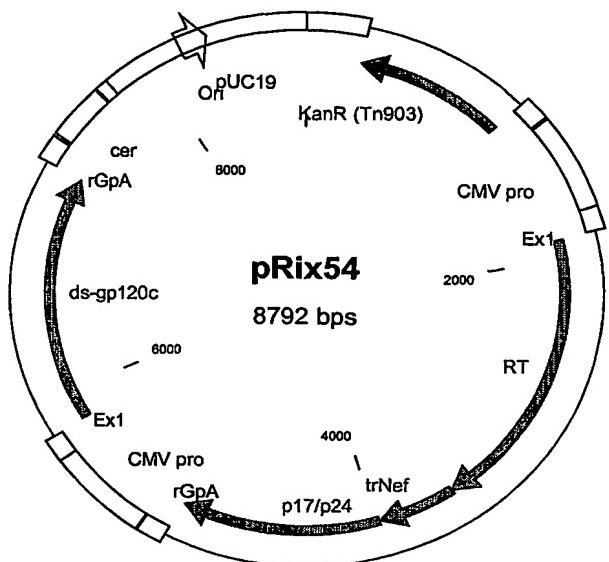


DNA and amino acid sequences of inserts:

Identical to pRix52 and pRix12

**Figure 26**

pRix54

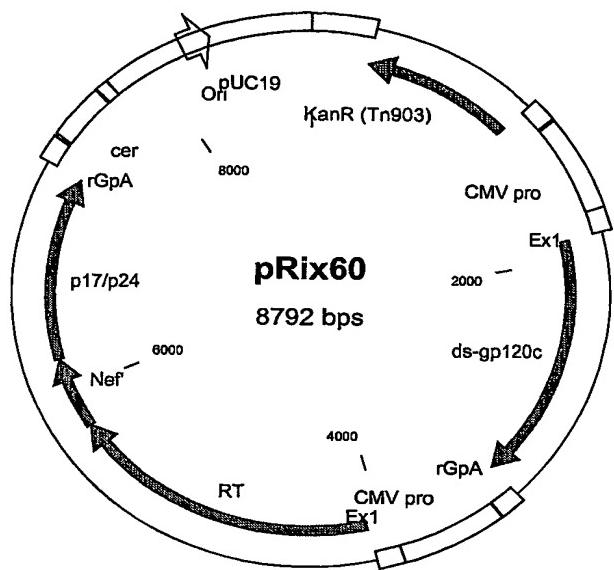


DNA and amino acid sequences of inserts:

Identical to pT-RNG and pRix12

**Figure 27**

pRix60

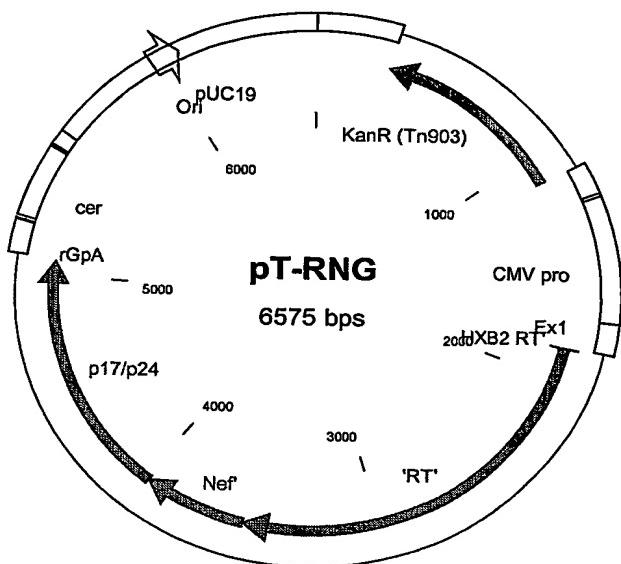


DNA and amino acid sequences of inserts:

Identical to pRix12 and pT-rng

**Figure 28**

pT-RNG



DNA sequence of insert:

ATGGGCCCATCAGTCCATCGAGACCGTGCCTGAAGCTGAAACCGGGATGGACGGCCCAAGGTCAA  
 GCAGTGGCCACTCACCGAGGAGAACATCAAGGCCCTGGAGATCTGCACCGAGATGGAGAAAGAGGGCA  
 AGATCAGCAAGATCGGGCTGAGAACCCATAACAACACCCCCGTGTTGCCATCAAGAAGAACGACAGCACC  
 AAGTGGCGCAAGCTGGTGATTCCGGAGCTGAATAAGCGGACCCAGGATTCTGGAGGTCCAGCTGGG  
 CATCCCCCATCCGGCCGGCTGAAGAACAGAGCGTGACCGTGCTGGACGTGGCGACGCTTACTTCA  
 GCGTCCCCTCGGACGAGACTTAGAAAGTACACCGCCTTACCATCCATCTATCAACAACGAGACCCCT  
 GGCATCAGATATCAGTACAACGTCTCCCCCAGGGCTGGAAGGGCTCTCCGCCATTTCAGAGCTCCAT  
 GACCAAGATCTGGAGCGTTCGGAAGCAGAACCCGATATCGTATCTACAGTACATGGACGACCTGT  
 ACGTGGGCTCTGACCTGAAATCGGGCAGCATCGCACGAAGATTGAGGAGCTGAGGAGCATCTGCTGAGA  
 TGGGGCCTGACCCTCCGGACAAGAACGATCAGAAGGAGCCGCATTCTGAAGATGGCTACGAGCTCCA  
 TCCCGACAAGTGGACCGTGCAGCCTATCGTCTCCCCGAGAAGGACAGCTGGACCGTGAACGACATCCAGA  
 AGCTGGTGGCAAGCTCAACTGGCTAGCCAGATCTATCCGGATCAAGGTGCGCCAGCTCTGCAAGCTG  
 CTGCGCGGACCAAGGCCCTGACCGAGGTGATTCCCTCACGGAGGAAGCCGAGCTCGAGCTGGCTGAGAA  
 CGGGAGATCTGAAGGAGCCCGTGCACGGCGTGTACTATGACCCCTCCAAGGACCTGATGCCGAAATCC  
 AGAACGAGGGCAGGGCAGTGGACATACCAAGATTACAGGAGCCTTCAAGAACCTCAAGACGGCAAG  
 TACCCCGCATGAGGGCGCCACACCAACGATGTCAAGCAGCTGACCGAGGGCGTCCAGAACGATCACGAC  
 CGAGTCCATCGTATCTGGGGAAAGACACCCAAAGTTCAAGCTGCCTATCCAGAACGGAGACCTGGGAGACGT  
 GGTGGACCGAATATTGGCAGGCCACCTGGATTCCCGAGTGGAGTCGTGAATACACCTCTGGTGAAG  
 CTGGTGTACCGACTCGAGAACGGAGCCATCGTGGCGGGAGACATTCTACGTGGACGGCGGCCAACCG  
 CGAACAAAAGCTGGGAAGGCCGGTACGTACCAACCGGGGCCAGAACGGTGTGTCACCCGTACCGACA  
 CCACCAACCGAGAACGCGAGCTGCAGGCCATCTATCTGCTCTCCAGGACTCCGGCTGGAGGTGAACATC  
 GTGACGGACAGCCAGTACCGCGTGGCATTATTCAAGGCCAGCCGACCAGTCCGAGAGCGAACTGGTGAA  
 CCAGATTATCGAGCAGCTGATCAAGAACGAGAACGGTCTACCTCGCTGGTCCGGCCATAAGGGCATTG  
 GCGGCAACGAGCAGGTGACAAGCTGGTAGTGAGTCGGGGATTAGAACGGTGTGATGGGGTTTCCAGTC  
 ACACCTCAGGTACCTTAAGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTAAAGAAAA  
 GGGGGGACTGGAAGGGCTAATTCACTCCAAAGAACGACAAGATATCCTTGATCTGTGGATCTACCACAC  
 AAGGCTACTTCCCTGATTGGCAGAACTACACACCAGGGCAGGGTCAGATATCCACTGACCTTGGATGG  
 TGCTACAAGCTAGTACCAAGTTGAGCCAGATAAGGTAGAAGAGGCAATAAAGGAGAGAACACCAGCTTGT

**Figure 28 continued**

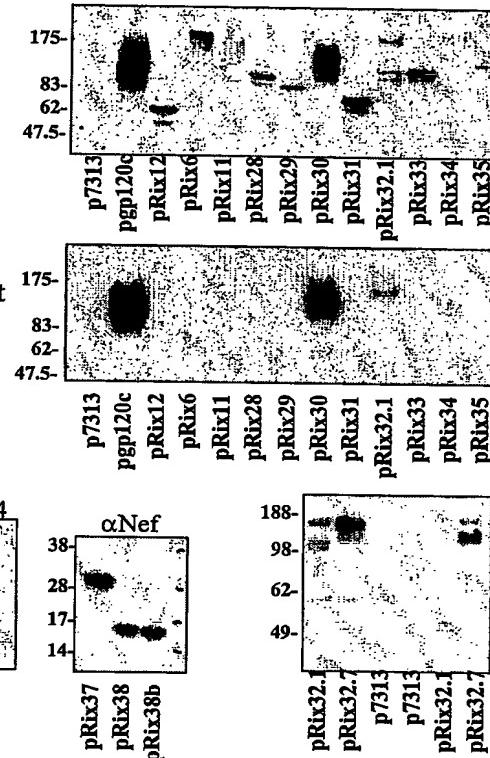
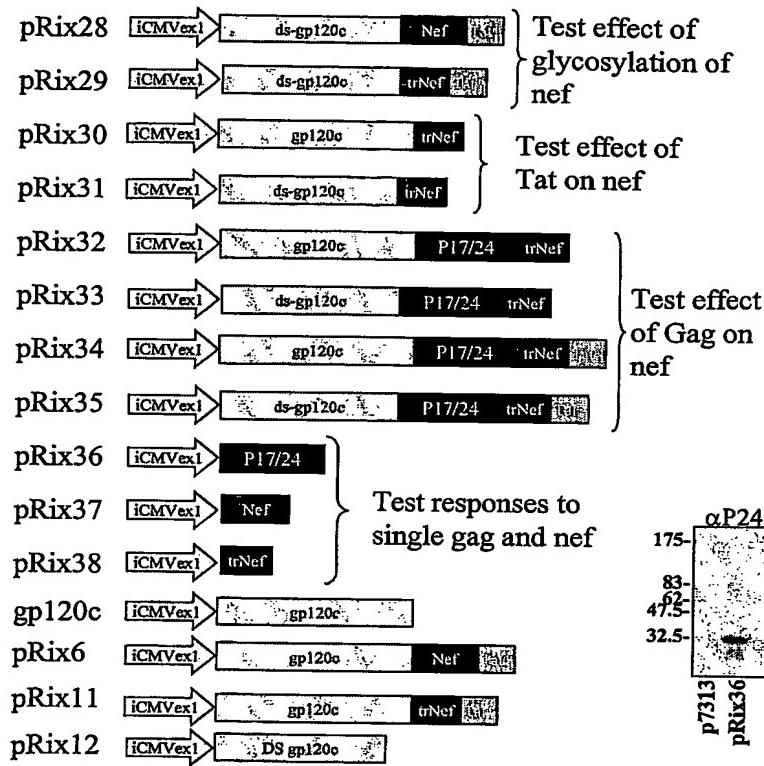
ACACCCCTGTGAGCCTGCATGGGATGGATGACCCGGAGAGAGAAGTGTAGAGTGGAGGTTTGACAGCCGCC  
TAGCATTCATCACGTGGCCCGAGAGCTGCATCCGGAGTACTTCAGAACTGCATGGGTGCCCGAGCTTCG  
GTACTGTCTGGTGGAGAGCTGGACAGATGGGAGAAAATTAGGCTGCGCCGGAGGCAAAAGAAATACAA  
GCTCAAGCATATCGTGTGGGCCTCGAGGGAGCTTGAACGGTTGCCGTGAACCCAGGCCCTGCTGGAAACAT  
CTGAGGGATGTGCCAGATCCTGGGCAATTGCAGCCATCCCTCAGACCGGGAGTGAAGAGAGCTGAGGTCC  
TTGTATAACACAGTGGCTACCCCTACTGCCTACACCAGAGGATCGAGATTAAGGATACCAAGGAGGCCTT  
GGACAAAATTGAGGAGGAGCAAAACAAGAGCAAGAAGAAGAGGCCAGCAGGAGCTGACACTGGGCATA  
GCAACCAGGTATCACAGAACTATCCTATTGCCCCAACATTCAAGGGCCAGATGGTTCATCAGGCCATCAGC  
CCCCGGACGCTCAATGCCCTGGGTGAAGGTTGCAAGAGAAGGCCCTTTCTCCTGAGGTTATCCCCATGTT  
CTCCGCTTGAGTGAGGGGGCCACTCCTCAGGACCTCAATACAATGCTTAATACCGTGGGCCATCAGG  
CCGCCATGCAAATGTTGAAGGAGACTATCAACGAGGAGGGCAGCCGAGTGGGACAGAGTGCATCCCGTCCAC  
GCTGGCCAATCGCGCCGGACAGATGCGGGAGCCTCGCGGCTCTGACATTGCGGGCACCACCTCTACACT  
GCAAGAGCAAATCGGATGGATGACCAACAATCCTCCCATCCCAGTTGGAGAAATCTATAAACGGTGGATCA  
TCCTGGGCTGAACAAGATCGTGCATGTACTCTCCGACATCCATCCTGACATTAGACAGGGACCCAAA  
GAGCCTTTAGGGATTACGTCGACCGTTTATAAGACCCCTGCGAGCAGAGCAGGCCCTCAGGAGGTCAA  
AAACTGGATGACGGAGACACTCCTGGTACAGAACGCTAACCCGACTGCAAACAATCTGAAGGCACTAG  
GCCCGGCTGCCACCCCTGGAAGAGATGATGACCGCCTGTCAGGGAGTAGGCGGACCCGGACACAAAGCCAGA  
GTGTTGAA [SEQ ID NO: 88]

Amino acid sequence of insert:

MGPISPIETVPVKLKPGMDGPVKVQWPLTEEKIKALVEICTEMEMEKEGKISKIGPENPYNTPVFAIKKDST  
KWRKLVDRELNKRTQDFWEVQLGIPHPAGLKKKSVTLDVGDAYFSVPLDEDFRKYTAFTIPSINNETP  
GIRYQYNVLPGWKGSPAIFQSSMTKILEPFRKQNPDIVIYQYMDLYVGSDLEIGQHRTKIEELRQHLLR  
WGLTTPDKKHQKEPPFLKMGYELHPDKWTVPQIVLPEKDSWTVNDIQKLVGKLNWASQIYPGIKVRQLCKL  
LRGTKALTEVIPLTEEAELELAENREILKEPVHGVYYDPSKDLIAEIQKQGQQWTYQIYQEPFKNLKTGK  
YARMRAHTNDVKQLTEAVQKITTESIVIWGKTPKFKLPIQKETWETWWTEYWQATWIPEWEFVNTPPLVK  
LWYQLEKEPIVGAETFYVDGAANRETKLGKAGYVTNRGRQKVVTLDTNQKTELQAIYLALQDSGLEVNI  
VTDSQYALGI IQAQPDQSESELVNQIIEQLIKKEVYLAWVPAHKIGIGGNEQVDKLVSAGIRKVLGVGFV  
TPQVPLRPMTYKAADVLSHFLKEKGGLEGLIHSQRRQDILDWLWYHTQGYFPDWQNYTPGPGVRYPLTFGW  
CYKLVPVEPDKVEEANKGENTSLLHPVSLHGMDDPEREVLEWRFDSSLAFHHVARELHPEYFKNCMGRAS  
VLSGGELDRWEKIRLRPGGKKKYKLKHIVWASRELERFAVNPGLETSEGCRQILGQLQPSLQTGSEELRS  
LYNTVATLYCVHQRIEIKDTKEALDKIEEEQNKSKKAAQAAADTGHSHNQVSQNYPIVQNIQGQMVMHQAIS  
PRTLNAWVKVVEEKAFSPEVIPMFALSEGATPQDLNMLNTVGGHQAMQMLKETINEAAEWRDVHPVH  
AGPIAPGQMREPRGSIDIAGTTSTLQEIQIGWMNNPPIPVGEBIYKRWIILGLNKNVRMYSPTSILDIRQGPK  
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VL [SEQ ID NO: 89]

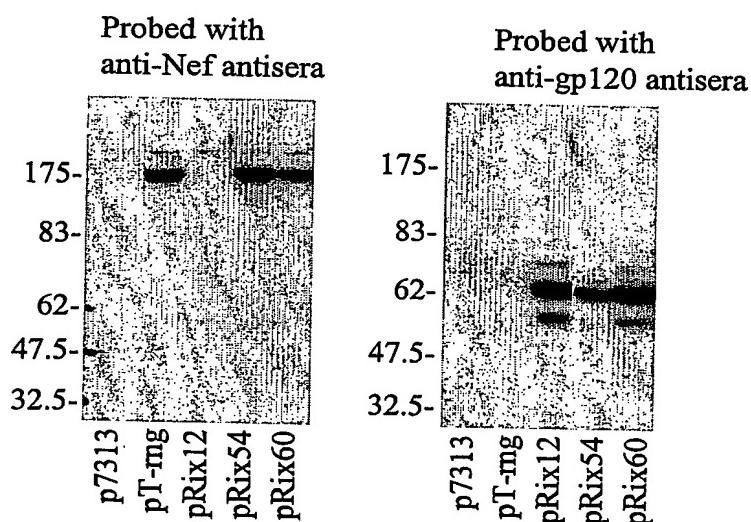
**Figure 29**

A schematic representation of the constructs and associated expression data is shown below



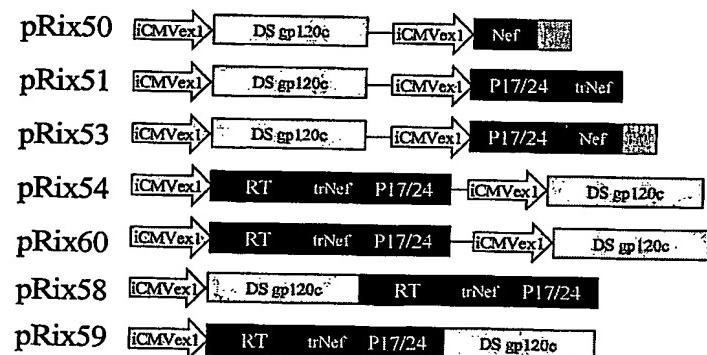
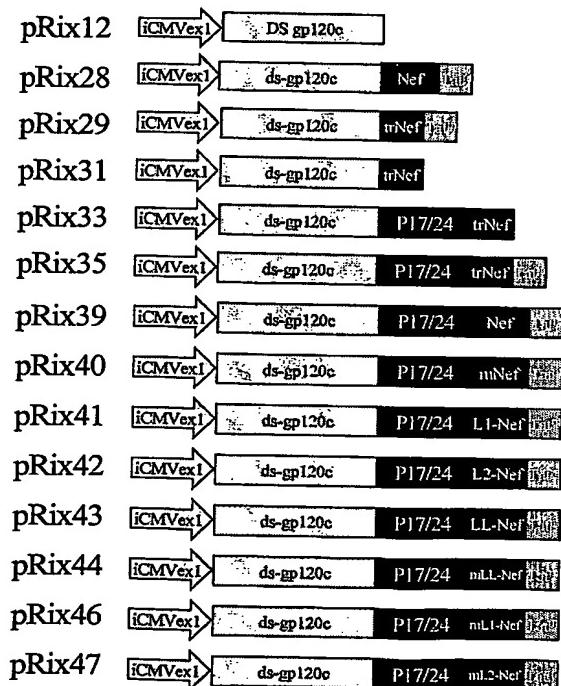
**Figure 30**

A schematic representation of further constructs and associated expression data:



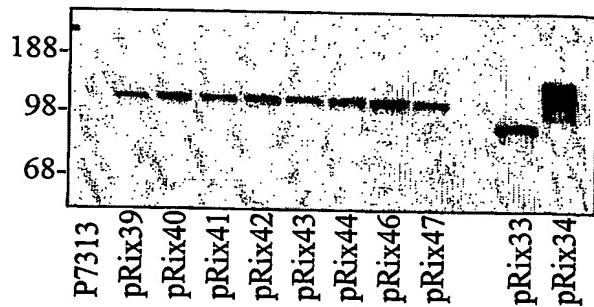
Western blots probed with anti-nef (left) or anti-gp120 (right) antisera showing the expression of RNG and dsgp120 from dual promoter and single vectors.

Plasmid schematics:

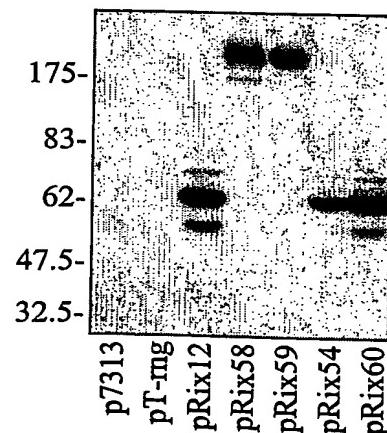
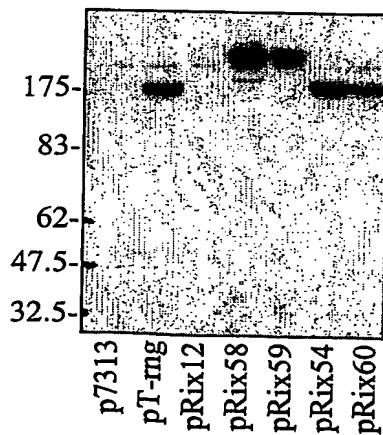
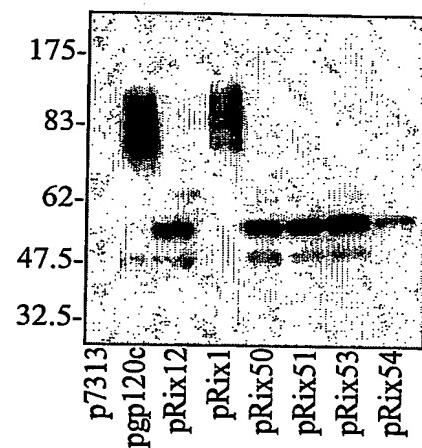
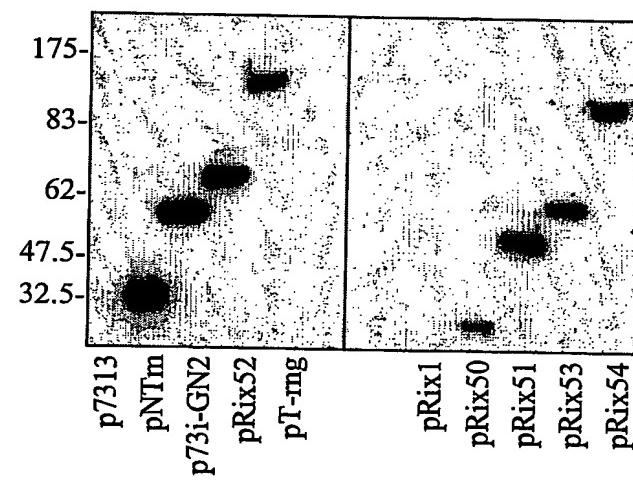


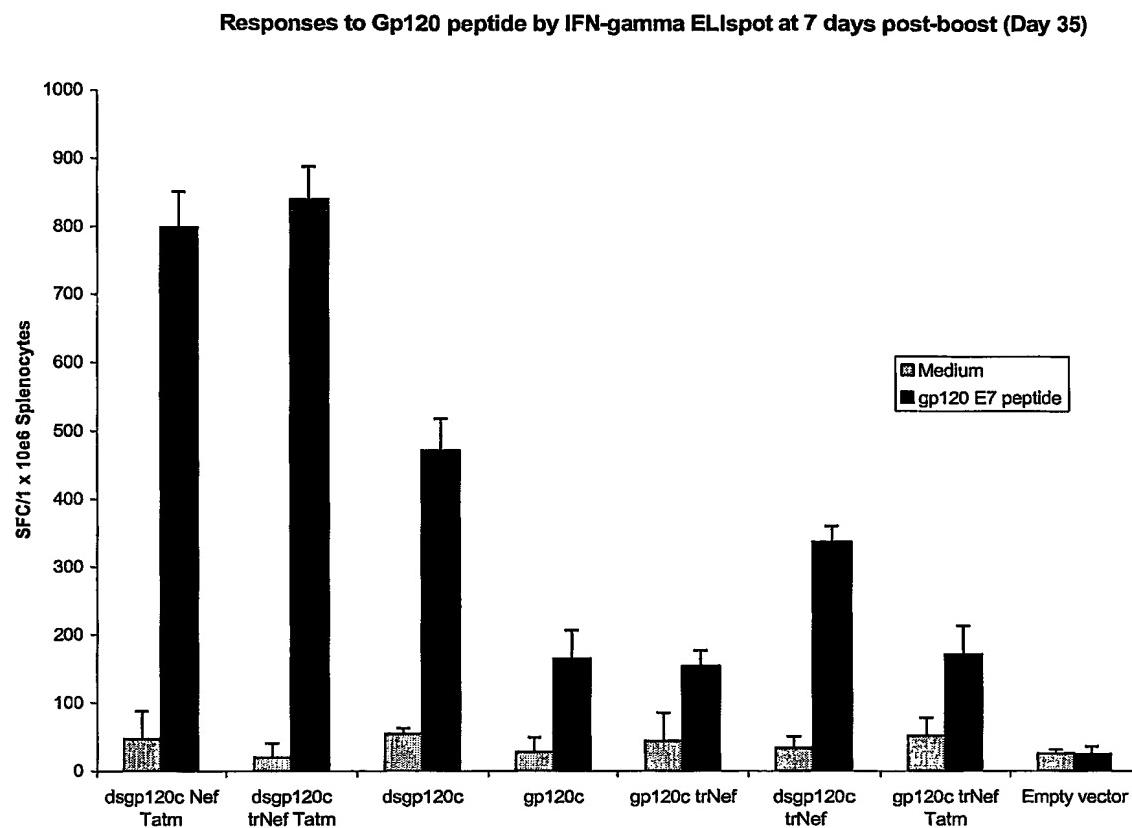
**Figure 31**

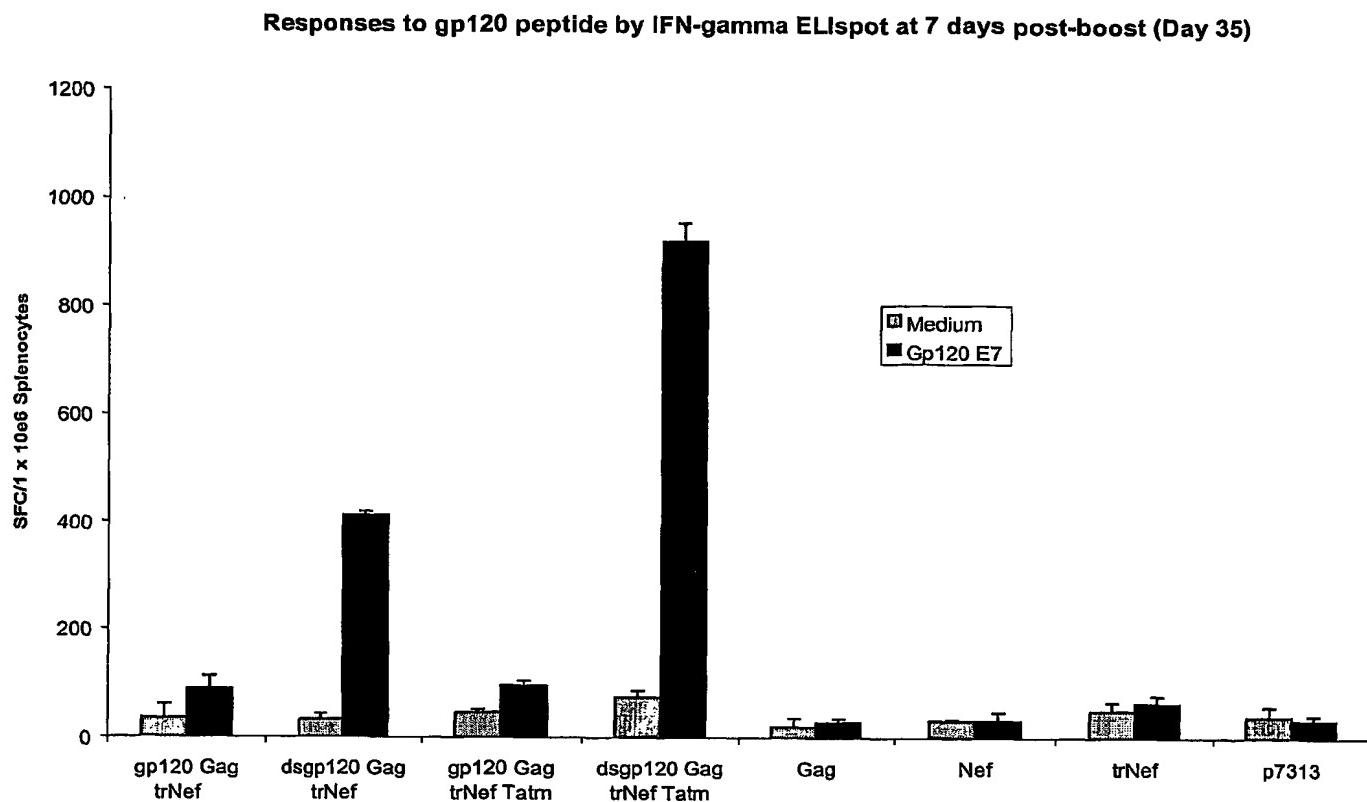
Expression data (anti-Nef) for dsgp120/Gag/Nef/Tat fusions with mutations in Nef (pRix 40-47)



Expression data (anti-Nef and anti-gp120) for dual promoter vectors



**Figure 32**

**Figure 33**

**Figure 34**

Response to in vitro restimulation with Gp120, Gag and RT peptides at 7 days post-boost (Day 35)  
using IFN-gamma ELIspot

